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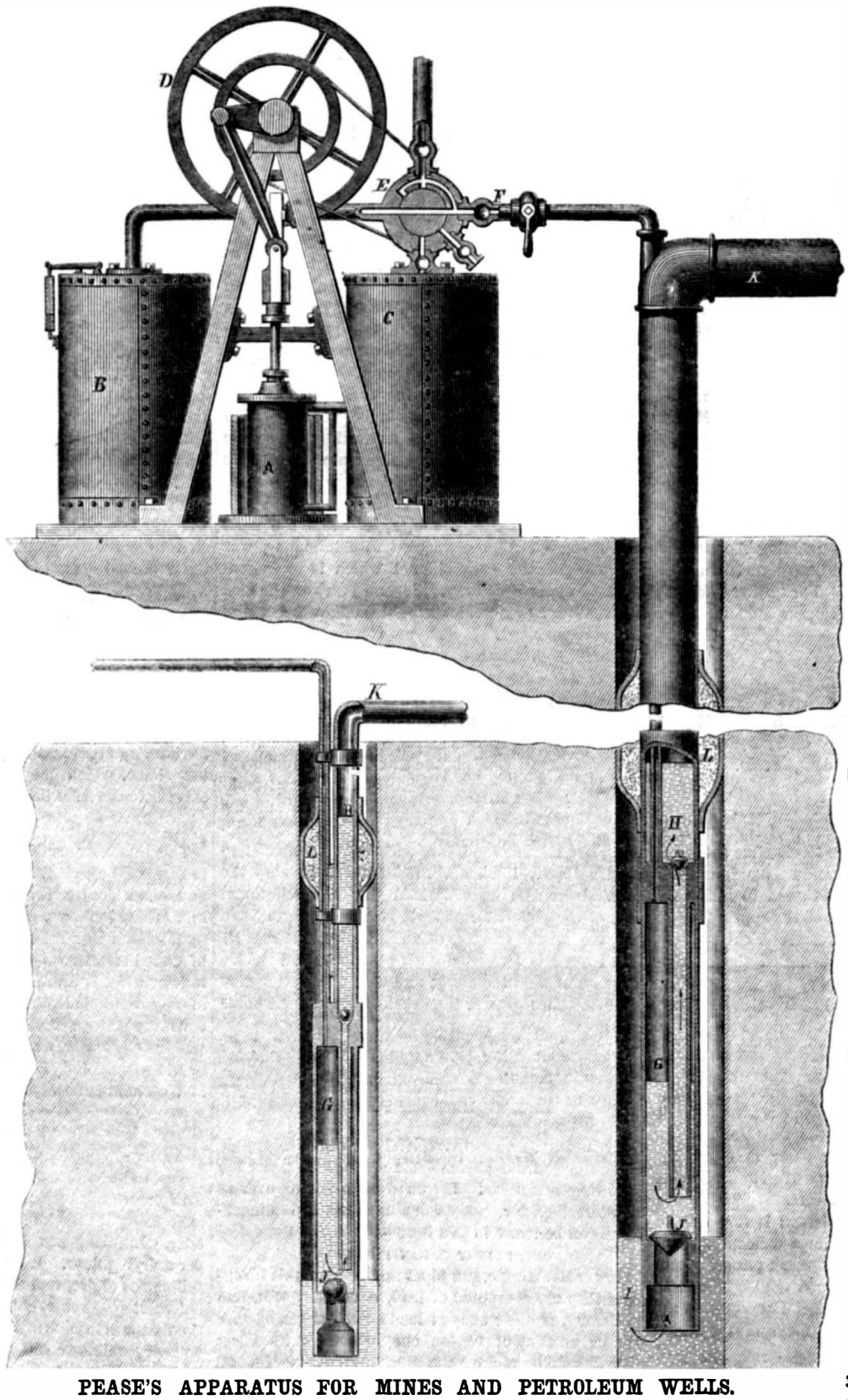
Apparatus for Mines & Petroleum Wells.

There are many points of coincidence connected with obtaining the natural riches of earth which render a consideration of them not uninteresting. When coal was first discovered, it cropped out near the surface, and was for a time easily procured. When gold was first found in California, nuggets were often picked up on the surface, and "pay dirt," as miners call gold-bearing soils, was to be found on all sides. So, too, with petroleum, oozing from the soil, filling up salt wells, overspreading the surfaces of streams, it forced itself on the attention of men, almost demanding to be collected. When a drill was driven into the earth, spouting columns of oil rushed upward with violenceproclaiming the great stores hidden below. But coal is now obtained only at the cost of much labor and money. Nuggets no longer lie around loose on the surface; flowing wells are the exception, and not the rule as formerly. Nature having done her part in revealing the secret stores laid up for ages, leaves the procurement of them to the genius and enterprise of man.

The discovery of petroleum has called forth more ingenuity and occasioned the invention of more machinery within a given time than any other article of commerce; and, from signs, it would seem that the attention of the inventive public has but just awakened to its importance.

The engravings published in connection with this article, represent the principle of a new apparatus or system for getting petroleum, also for freeing mines of water, which promises unusual results. It is well known that nearly every possible means for aiding and augmenting the flow of oil in wells has been tried with more or less success. Compressed air has been employed, hydrostatic pressure, steam blown in at high pressure, torpedoes exploded, exhausted receivers—these and other devices have been brought forward and are in daily use. In the present invention the action of the apparatus is analogous to that of the low-pressure or condensing engine. A stream of compressed air is forced into the well by suitable means hereafter to be described; this air, acting upon the surface of the oil in the bottom of the well tube, forces it up the tube into a chamber, where it is sustained or prevented from returning. This compressed air is then exhausted, leaving a comparative vacuum, which causes the oil in the well to rush up to fill the vacuum. The alternate action of the pressure and exhaust causes a vibration or pulsation in the well tube, which results in filling the chamber at every pulsation, causing an enormous and rapid delivery of the precious fluid. The advantages of this system are, that there is no subterranean machinery—pumps for instance—to be operated at immense depths; there is consequently no delay in repacking pump plungers, no defective operation through faulty valves.



PEASE'S APPARATUS FOR MINES AND PETROLEUM WELLS.

The oil rises into a chamber of any given length, and is instantly elevated that length, whatever it may be. If an ordinary lifting pump has a stroke of thirty inches, the oil is raised that distance each stroke, but with this device, if the oil chamber is thirty feet in length, the fluid is raised so far each stroke, and at one half of a revolution of the valve. From this statement it is easy to see that the quantity raised by this system is far greater than is produced by half a dozen pumps. As the inventor says, it will take a good flowing well to supply it. One apparatus can be made to work a number of wells, it only requiring the arrangement in the well tube, and connecting the air pipe with the valve; any one well can work independently of the others, or all work together from one and the same power, of which there is always a surplus for contingencies. The lowest estimate of its capacity made by scientific and practical men who have examined it is, that it is equal to over two thousand two hundred barrels per day from a two-inch pipe, and four thousand and ninety barrels per day from a two-and-a-half-inch chamber; and over eight thousand two hundred barrels per day from a 3-inch pipe—the amount varying with the size of the pipe-tube, chamber and displacement pipe.

The mechanical parts of this system are few in number and not complicated; a brief statement will enable all to comprehend them.

A represents an air pump which exhausts the air from one of the receivers; upon the opposite end of the shaft is another similar pump used for forcing air into the receiver, B. Both pumps are driven by a

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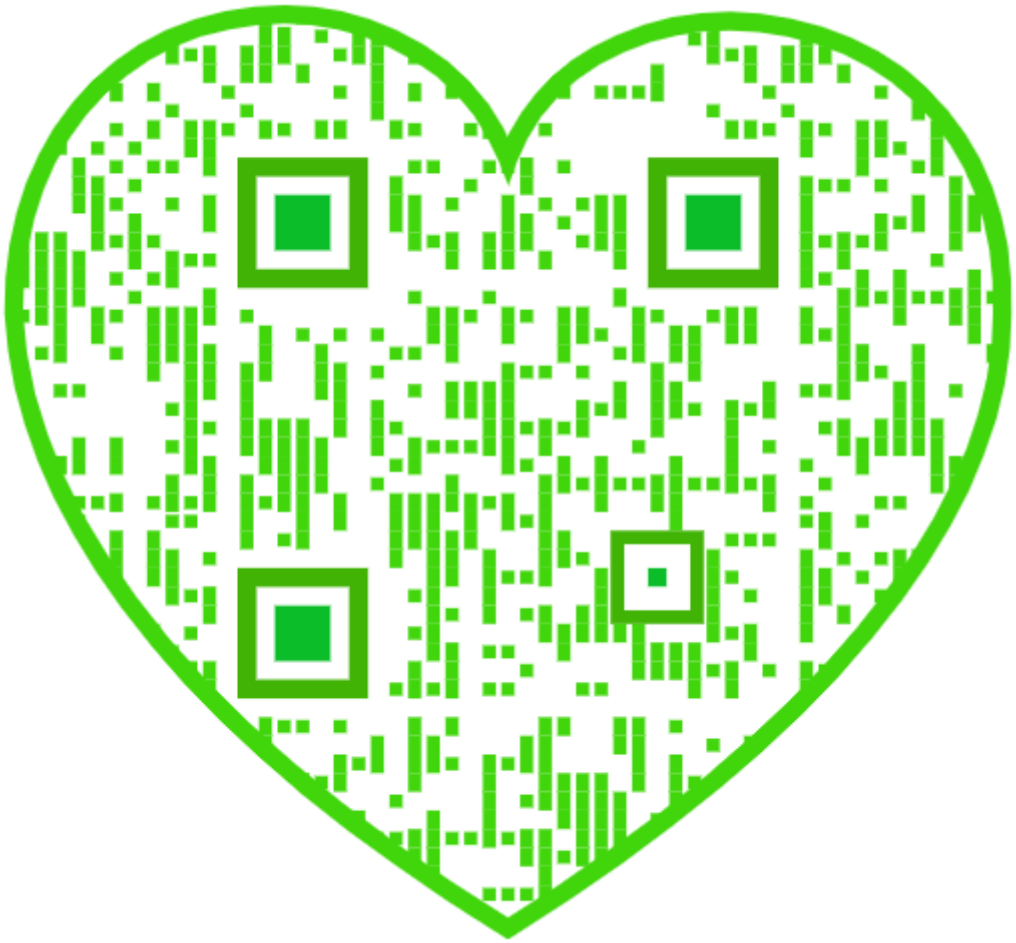

pulley and belt, D. The rotary valve, E, can be worked by a pulley on the shaft, or worked independent of the pumps. This valve is of peculiar construction and is covered by a separate patent. It opens and closes communication alternately with the well and the atmosphere and the vessels, B and C. The pipe, F, on which this valve is placed leads into both vessels. By the action of the valve, then, a charge of compressed air is forced down upon the surface of the oil in the pipe or chamber, G; the result is, that the oil takes the course indicated by the arrows, and rises into the chamber, H; by the continued actions of the rotating valve, E, the compressed air is exhausted immediately, so that the oil from below, at I, comes rushing up through the valve, J, to supply the vacuum, and thus raises the oil forced by the percussive action of the compressed air into the tank through the pipe, K. Of course the return of the oil is also prevented by the same valves. Where there is a sufficient amount or hight of oil or water in the well, only one receiver would be in use until the water was exhausted sufficiently to require the other; in such a case the pressure is relieved, by the valve only, to a sufficient amount to allow the chamber or vacuum to fill the pressure is counterbalanced, and the column of air vibrates back and forth.

For mines, or sluggish wells, or those rendered useless by the seams getting filled up, a chamber twenty or thirty feet, in a state of vacuum thirty or more times a minute, would draw in most everything but the rock. F is a stop-cock, and when closed it fairly seals the well up, for nothing can raise the valve or get into the lower chamber. L is the ordinary seed bag by which the tube is packed. M is a jacket to be filled with water to keep the air pumps cool.

Two patents have already been granted on this invention through the Scientific American Patent Agency, dated as follows—March 21 and March 28, 1865. Another application is pending before the Patent Office. Patents have also been secured through this Office in foreign countries. For further information address the patentee, F. S. Pease, Buffalo, N. Y.

POLYTECHNIC ASSOCIATION OF THE AMERICAN INSTITUTE.

The Association held its regular weekly meeting at its room at the Cooper Institute, on Thursday evening May 17, 1865, the President, S. D. Tillman, Esq., in the chair.

THE GEOLOGY OF NEW YORK CITY.

Dr. Stevens said that the Lyceum of Natural History had appointed a committee to examine the geology and mineralogy of Manhattan Island, and the geological examination was assigned to him. He then gave a detailed description of the appearance of the rocks as exhibited in the numerous excavations made in grading the streets, and stated the conclusion to which he had arrived.

The lowest deposit was a mud rock which has since been metamorphosed by chemical action into gneiss —stratified granite. Over this was a deposit of limestone. After the rocks were hardened, by one of those slow changes in the crust of the earth which are constantly going on, there came a very gradual pressure from the east toward the west, forcing the edges of the rock toward each other and bending the strata into folds. There are five of these folds between the Hudson and East rivers.

Mr. Ely remarked that this island is very rich in curious minerals. He had quite a collection gathered here; among them one that was a perfect plum.

Dr. Stevens said that that was doubtless a fossil which had been brought in by glacial action from the rocks above Haverstraw. The rocks of the island contain no fossils.

THE NEW THREE-CENT COIN.

Mr. Feuchtwanger presented for inspection one of the new three-cent pieces, and stated that it was composed of 75 per cent copper and 25 per cent nickel, which makes a very hard alloy. It takes 254 of the pieces to weigh a pound, and they cost the Government just half a cent apiece.

SOLID FLOATING ON MOLTEN METAL.

Dr. Parmelee observed that Mr. L. L. Smith was probably known to many persons present as a skillful electroplater of unusual scientific attainments.

Mr. Stewart:—He has made the finest electroplates ever made in the country.

Mr. Parmelee:—Yes. Well, Mr. Smith made an experiment to ascertain whether solid zinc will float on melted zinc, and he found that it would not. The kettle of melted zinc was 20 inches wide, and 12 inches deep; the melted metal within 3 inches of the top. The solid pieces of zinc were 6 inches long, 4 inches wide and 1 inch thick, and they would invariably sink.

Dr. Rowell:—If the solid zinc is of about the same temperature as the melted zinc it will always float; I have tried it twenty times. Perhaps Mr. Smith may have got a piece of metal cold enough to sink.

TUNNELING.

This being the regular subject of the evening, the President called on Mr. Stewart to open the discussion.

Mr. Stewart read a paper giving a description of a new tunneling machine invented by Major Plas. The machine is in the form of a car, with four radiating legs or arms by means of which it can be keyed firmly into the tunnel. A wheel, the diameter of which is nearly the same as that of the tunnel, carries several series of steel chisels disposed in concentric rings—these rings being two or three feet apart. By means of an engine driven by compressed air, the wheel is made to revolve slowly, the chisels at the same time being drawn back by means of cams, and then driven violently forward by stiff springs, thus striking the rock with their sharpened ends a series of rapid blows. In this way narrow circular grooves are cut in the rock to the depth of some two feet, when the workmen withdraw the wheel that bears the chisels, and insert steel wedges in the grooves. Then a massive iron ram is driven forward by the engine with great force, driving the wedges into the grooves and breaking the rock into blocks which can be readily removed.

Mr. Montgomery, of Brooklyn, said that the most interesting question connected with tunneling, was the plan of the great tunnel which is to be constructed under Broadway. Several years ago he filed a caveat for a plan which he still thought the best of any yet suggested. It amounts to sinking the present street right down to a level with the cellar floors, and constructing an iron street at the level of the present one. The lower street is to be provided with a double track railroad, with cars to be drawn by an endless wire rope, which will pass around immense drums at the two ends of the track, and be supported along the line by grooved wheels in the usual manner. The rope will have a constant motion, and the cars will be attached to it by an instrument something like the human hand, which can be opened to release its hold whenever it is desired to stop the cars. It can be demonstrated that the additional rent of the cellars for a single year will more than pay the whole expense of constructing this tunnel, that two cents fare from each passenger will yield a large interest on the stock, and that the speed may be three times greater than that of the present horse cars.

The subject of city transportation was selected for the next evening.

RECENT ENGLISH PATENTS.

By late mails we have received our usual full supply of foreign journals; from some of them we make the following selections. Let no one pass them over as uninteresting, for many valuable hints and suggestions can be found in this list:—

PATENT ORGAN PIPES.

In constructing organ pipes according to this invention they are composed of lead, or an alloy of it, and antimony, or other alloy of lead coated or plated with tin, or an alloy of tin, on one or both of its sides; this they do by making the pipes from sheets of metal made by coating a sheet of lead or alloy of lead on one or both of its sides with a sheet of tin or alloy of tin; or the plated sheets of metal from which the pipes are manufactured may be made by first coating an ingot of the alloy of lead with tin or alloy of tin, and rolling down such coated ingots into sheets of the required thickness for making into pipes.

PATENT DRESS FASTENINGS.

These improvements relate to buckles, clasps, hooks, and all kinds of fastenings generally, as also to the methods of manufacturing and ornamenting such articles, and, consist, first, in a new method of manufacturing and uniting the tongues and frames of buckles by stamping in a die, and then uniting the parts by pressure without the aid of solder. Secondly, in an improved method of connecting the several parts of the buckles, hooks, or other articles by means of eyelets, which are formed of a single piece with the frame, and folded down or turned over to permit of the passage of the pin or rivets uniting the parts of the buckle. Thirdly, in a method of attaching or fixing a ribbon or waist belt to the buckle or clasp without sewing. This the inventor effects by cutting two slits in the frame of the buckle in which the ribbon is doubled over, in order to fix it in position. The connection of the parts is effected in this case in a similar manner to that above described. Fourthly, the ornamentation of the improved pins, buckles, and other articles, by means of rivets having facets, or otherwise ornamented, which he fixes in the article, and then rivets at back on a second plate of similar form, in which is made the eyelet forming the improved fastenings. Fifthly, the buckles may be further furnished with a plate in their interior, the edge of which is turned up in the form of a hook, whereby it may be connected to the frame of the buckle, which is similarly formed at one end; in this case the buckle is solid, and without any openings; the exterior surface may also be ornamented in any suitable manner.

PATENT CATCH FOR INK BOTTLES.

This invention consists in the use of an additional catch or fastener, so arranged and constructed as to lock with that on the ink-bottle or box, and thus prevent its becoming accidentally opened. The usual aperture made for the reception of the hasp, such as is in use on the ink bottles at present manufactured, the inventor causes to be carried right through the lid of the box, and it is up and down this opening—which is made smaller on the outside than the inside—so as to retain the fastener in its proper position, that the improved system of catch is applied.

PATENT TOOTHED CHAINS.

According to this invention the sides of the chain are composed of as many links as required, and made of any desired ditch and strength. The distance between the inner links depends upon the thickness of the wheel, but over the pins which constitute the pitch and hold the links together he places hoops or ferrules, so fitted that they can turn on the pins, but not shake, which hoops or ferrules, are intended to substitute the solid links or pins before in use.

PATENT FLAT CHAIN.

This invention consists in forming flat chain either in bands for pit chains, driving bands for machinery, and other similar uses, or in sheets for armor plating, bridge building, and various other like purposes, by interlacing or screwing together separate lengths of coiled metal rods or wires. Each of these metal rods or wires is first formed into an open twist or coil of any desirable length and thickness. Two of these coils are then screwed or interlaced together, coil within coil, and any additional number of coiled rods or wires is similarly interlaced until the length or area of the chain is formed.

Use of Waste Heat in Kilns.

A correspondent of the London *Builder*, who appears to be a practical man, referring to the gases arising from Portland cement, says that while it is burning in the kilns a great heat is obtained by consuming the gases, and then passing the same under a drying floor. When alight, the gases are like a rolling sea of fire, and this will travel a great distance before it requires a chimney-shaft; that is to say, if the flues are in a straight line, the heat from the gas will dry well for a distance of 120 ft. in length, and 60 ft. in width. The kilns he speaks of hold, when burnt, 150 casks. There is a greater improvement, however, which, our correspondent suggests, could be made; first, to let the heat work another set of flues while the men are taking off the stuff, and as soon as they have it off they could shut off another bay; or they might shut off nineteen flues out of twenty, and let the heat work up the one, which would be much better for men working on these hot flues. Secondly, by having a coke oven beside the furnace the gas from this would pass through the coke

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fire, and the coke from the oven would supply the furnace and much more heat. This plan of furnace would consume but a small quantity of coke, and could be applied to any kind of works for drying, and for material of any description, and if properly constructed would, he thinks, be preferable to any other.

RECENT AMERICAN PATENTS.

The following are some of the most important improvements for which Letters Patent were issued from the United States Patent Office last week; the claims may be found in the official list:—

Boiler for Kitchen Ranges.—This invention relates to a very important improvement in the mode of securing the plate constituting the side or body portion of a kitchen boiler, to and upon the head plates of the same; it consists in so forming the head plates that when the body of the boiler has been soldered, or in any other proper manner fastened thereto, both the expansion and contraction of the metal composing the boiler shall be resisted in an equal degree—a result which has never before been accomplished in such boilers, and the importance of which as regards economy and safety is manifest to all. The inventor is Joseph H. Ash, of Brooklyn, N. Y.

Breech-loading Fire-arm.—The object of this invention is to convert, in an easy and simple manner, ordinary Springfield muskets to breech-loaders without disturbing the lock or any part connected therewith. The invention consists in the application of a tapering socket in the cone seat of a musket to receive a wedge-shaped projection, extending from the side of the breech block, which is hinged to the top of the barrel, and with a plunger passing through said wedge-shaped projection in place of the cone, in combination with the ordinary lock and hammer, in such a manner that a cartridge placed in the barrel can be exploded by the action of said hammer without disturbing its original position or changing any other portion of the lock; at the same time, by the wedge-shaped projection, a shoulder is formed which assists in holding the breech block in place when it is locked. A spring bolt, with a tapering head, which drops into a conical seat in the breech of the barrel, serves to lock the breech block; and a tongue or ridge, projecting from the inner surface of the breech block, and catching into a notch or groove in the barrel when the breech block is closed down, takes up the recoil and relieves the pivot connecting the breech block with the barrel from all strain. From the hinged breech block, or from its pivot, extends a spring arm which is applied in combination with an ejecter, in such a manner that, on throwing the breech block open, after a cartridge has been fired, the empty shell is withdrawn from the barrel, and a new cartridge can be introduced without loss of time. W. H. and G. W. Miller, of West Meriden, Conn.

Carpenter's Gage.—This invention relates to a gage which is provided with a stationary bead of the ordinary construction on one side, and with a movable slide provided with a band on the opposite side of its shank, in such a manner that the gage can be readily set for gaging the width and the thickness of a board. The head is adjustable by means of a wedge which can be readily fastened and unfastened without loss of time, and a set screw passing through the same serves to retain the slide for gaging the thickness. An additional adjustable band on that side of the chuck which contains the slide, acts in combination with the brad in the said slide as a mortise gage. Martin Horton, of Brooklyn, N. Y., is the inventor.

Needle for Knitting Machines.—This invention consists in the application to the needle of a cam so shaped that when the needle is drawn back after having received the yarn, it is made to raise the point of the sliding latch, and to carry it over the point of the hooks, thereby allowing the old stitch to drop over the new stitch without the liability of catching; it consists, also, in a stop applied to the latch and operating in combination with a space in the edge of the needle, in such a manner that said latch is held in a proper position while the needle is being thrust forward to receive the yarn for a new stitch, and to allow the old stitch to slip back over the point of the latch which, in this position, is covered by a slot or groove in the needle; further, in making the additional latch of one thickness, so that they may be operated in the same slot of the needle bed; and, finally, in the application to the latch of a stop and of a curved point, in combination with the cam of the needle, in such a manner that when the needle recedes the point of the latch is compelled to drop over the hook of the needle, and the operation of casting off the old stitch is rendered certain. L. L. Otis, of Florence, Mass., and Samuel L. Otis, Manchester, Conn., are the inventors.

Ore Grinder and Amalgamator.—This is an improved machine for grinding ores in a dry state and for amalgamating the precious metals contained therein to separate them from the foreign substances. The invention consists in an improved manner of attaching the shoes to the muller, whereby said shoes are enabled to adjust themselves to the bed or bottom of the pan, thereby compensating for the wear of the shoes and causing the bed or pan bottom to be preserved at all times, which adds greatly to the efficiency of the machine. This device is now in operation and works well. M. B. Dodge, of New York City, is the inventor.

Horse-power.—This invention relates, first, to a useful means for regulating the speed of the horse-power, whereby a steady and uniform motion of the same is obtained by an automatic mechanism. This speed-regulating mechanism consists of a ball-governer combined with a brake, the latter being arranged to operate against the balance or fly-wheel of the machinery. This invention relates, second, to a new and useful improvement in the construction of the endless platform whereby it is rendered rigid or inflexible in one direction, namely, under the downward pressure, due to the weight of the animal; and, at the same time, rendered flexible in the other or opposite direction, and the use of rollers in the platform dispensed with, the platform, being allowed to work on rollers and with much less friction than the ordinary platforms in use. Third, to a brake attachment for stopping the machine in case the belt of the same should break, a contingency of frequent occurrence, and which is liable to injure either the horse or the machine. Fourth, to an improved means for giving the machine and consequently the endless platform a greater or less degree of inclination as may be required. Fifth, to the manner of hanging the machine whereby the adjustment referred to may be made without affecting the belt by which motion is transmitted from the machine to the machinery to be driven. D. W. Hunt, San Francisco, Cal., is the inventor.

The Review of Sherman's Army.

The Washington correspondent of the *Times* says of the review of Sherman's army on the 24th:—

"The men who marched from the Ohio to the Tennessee under Buell, only to march back again; who first penetrated down into Alabama under the daring and nervous Mitchell; who fought at Perrysville under McCook, and checked the advancing tide of the rebellion to again send it reeling southward, at Stone River, under the chivalrous Rosecrans; who toiled over the rugged passes of the Cumberland Mountains, and seized the great natural fortress of Chattanooga; who held the left with a tenacity that saved them from defeat at Chickamauga, under the ever-victorious Thomas; who stormed Lookout Mountain, and fought above the clouds with Hooker; who cut their way from Chattanooga to Atlanta, and from Atlanta to the sea; who swept the Carolinas as with a besom of destruction, and who gave the finishing blow to the great rebellion, in following the lead of Sherman, and Howard, and Slocum—these were the men who received to-day the enthusiastic plaudits of a hundred thousand spectators.

"The interest of to-day has exceeded that of yesterday. The Army of the Potomac is our old acquaintance, but the Armies of Georgia and Tennessee few people here had ever seen. The most eager interest was therefore exhibited to view the veterans of the West, whose marches can only be counted by thousands of miles.

"The magnificent physique of the men at once elicits the admiration of all; tall, erect, broad-shouldered, stalwart men, the peasantry of the West—the best material in the whole world for armies. The brigades move by with elastic, springing step, in excellent order, and fully equal to the marching of yesterday, save that the intervals between brigades and divisions were longer, though the regiments themselves were kept well closed up. At the head of each brigade was a battalion of black pioneers, the simon-pure contraband, in the garments he wore on the plantation, with shovel and ax on the shoulder, marching with even front, sturdy step and lofty air.

"The rear of Gen. Barnum's brigade was brought up by the first genuine pack-mule train ever seen in Washington. I will warrant Barnum had an eye to letting his friends see with what a degree of comfort he travels. It was a most nonchalant, grotesque spectacle—two very diminutive white donkeys bestrode by two diminutive black contrabands. If that is not a paradox, a dozen patient pack-mules, mounted with Mexican pack saddles, camp equipage on one side and boxes of hard tack on the other; half-a-dozen contraband females on foot; a dozen contraband males leading the mules; a white soldier or two on horseback, to see that everything was all right; the servants of the mess, and the mess-kit, and, scattered about on the panniers of the mules, reclining very domestically, half a dozen game cocks, a brace of young coons, and a sure-footed goat, all presenting such a scene as brought laughter and cheers from end to end of the avenue.

"To give an idea of the length of the column, it is only necessary to state that when the rear of the Fourteenth corps passed over Long Bridge the head of the Twentieth had already crossed the river on the pontoon bridge at the foot of Twentieth street, the route being from the first-named bridge along Maryland avenue to the Capitol, around the Capitol on the south side to Third street east, along that northwardly to Maryland avenue, thence westwardly to the Capitol, passing around on the north side to Pennsylvania avenue, up this avenue westwardly by way of Fifteenth street to Twentieth street, and thence south to the river. The entire distance of this column was fully seven miles. These two corps did not embrace more than half the entire force reviewed, which would make the whole column about fifteen miles long. It required a little more than six hours to pass any given point."

MISCELLANEOUS SUMMARY.

THE TUNNEL RAILROAD.—Gov. Fenton has vetoed the recent act of the Legislature authorizing a company to construct an underground railroad in this city. He objects to it on the ground that no limit is assigned in which such road is to be completed; and furthermore, that the bill authorizes the transfer of State and city property for the use of the company.

DUTCH GAP CANAL NAVIGABLE.—The Dutch Gap Canal, it seems, has not been altogether a failure, for the Richmond *Whig* says that General Mulford arrived there from Fortress Monroe, having passed through Butler's Dutch Gap Canal on the steamer *Clyde*. This is the first steamer that has passed through.

FOR some years to come, old iron will be plenty enough around Petersburg, Va., to supply several large founderies. East and south of the city, plowing is dangerous, as exploding shells are very likely to send horse and driver high in the air.

ACCORDING to Dr. James Johnston, 800,000,000 of men smoke different sorts of tobacco; 400,000 smoke opium and its compounds; 300,000 hemp and haschish; 100,000 betel, and 40,000 the American plant coca.

THE directors of the Oporto Crystal Palace Company and the exhibition committee have fixed Monday, the 21st of August, 1865, as the opening day of the exhibition.

TUNS upon tuns of used-up, worn out "hoops" are annually worked up in cannon, shafts for machinery, etc., at the iron works of Lazell, Perkins & Co., Bridgewater, Mass.

IT is stated that George Cutler, Brattleboro, Vt., has apples sound and fresh, grown in 1863. He kept them in a cellar made in his garden, and packed in walnut saw-dust.

THE two large reservoirs at East Killingly, Conn., built to supply water to several cotton mills, gave way one night last week, causing damage to the amount of $30,000

THE very low price of wheat in England has induced farmers there to feed it to stock quite extensively. Sheep eat it at the rate of about a pint a day

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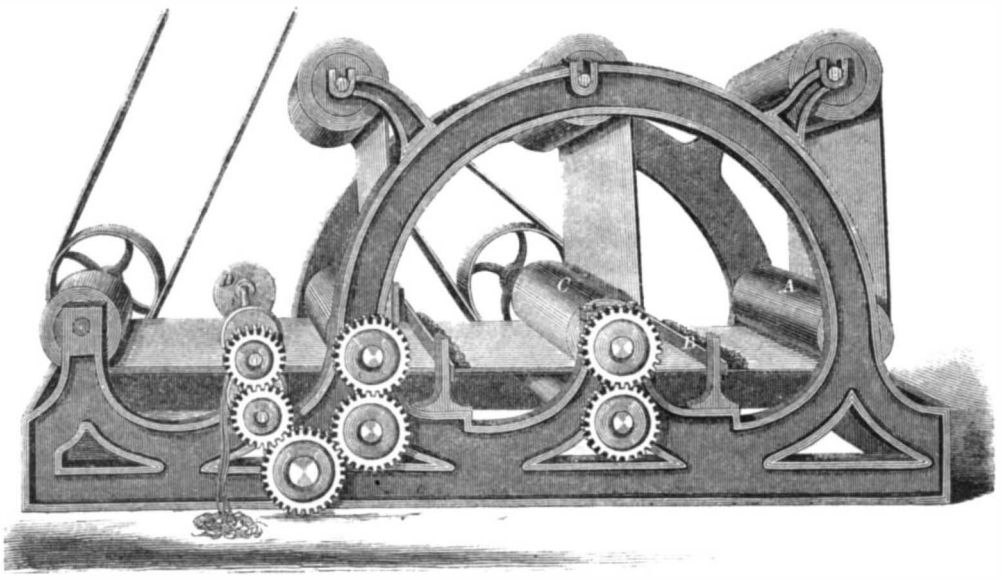
Improved Roofing Material.

There are many places where it is highly important that some expeditious method should be provided for protecting roofs from damage by fire and the weather, and also make it water-tight. This is particularly the case in new countries, or in temporary buildings which are to be put up and taken down again in a few months. To obtain this object many substances have been proposed, most of them being mixtures composed of bitumen and gravel. It has been found that the composition with which this fabric is coated is remarkably well adapted to shed water and resist fire, and it is now and has been for some time in use all over the country. The machine by which this fabric is prepared is here shown. Its arrangement is simple, and the chief merit lies in the article produced.



ROBINSON'S ROOFING MATERIAL.

The reader will see that three thicknesses of cloth or felt are used, and that each thickness is carried on a roller, as at A, where the process of laying on the composition begins. The fire-proof substance is then applied and laid evenly by means of the scraper, B. A second roller, C, in proper position, gives off another layer, which is also coated in the same way; this is succeeded by a third, and the same coating repeated until the ends unite, when the finished fabric is wound upon a fourth roll at the end of the frame; two revolving cutters, D, trim the edges and leave the felt one width throughout, thus making it come fair and even when laid on the roof, and also greatly facilitating the process of applying it.

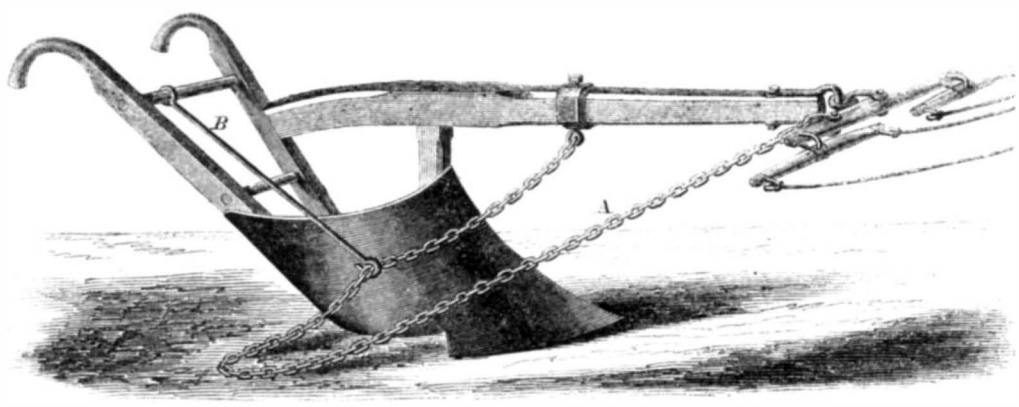
This method of manufacture gives a strong and durable coat that lasts for many years and can be applied in any climate, hot or cold. It is quickly and easily transported over mountains or in countries where there are no railroads, and is, for this reason, particularly adapted to the South American trade. It can be made in rolls of any length convenient to handle, and can be put on by any ordinary workmen.

This roofing material is the subject of a patent issued Sept. 13, 1864. For rights to make or for roofing, address Alfred Robinson, 73 Maiden Lane, New York.

Device for Plowing-in Cornstalks.

Men take from the soil more than they put in. While they greedily exact all it will give, they are unwilling to aid it by fertilizers. Weeds and cornstalks afford nourishment, if properly plowed under; in general they are left on the surface or sticking half out, and cursed as a nuisance.

This attachment to the plow, as shown in the engraving, is intended to facilitate and make the plowing-in certain, for by its aid all growth, of whatever kind, is caught under the advancing plowshare as waves roll under the bow of a ship; the plow rides over the stalks, and they are seen no more, but their influence on the soil is for a long time.



KILMER'S DEVICE FOR PLOWING-IN CORNSTALKS.

The attachment in question is merely a chain, A, connected to the plow beam and the double whiffletree, and provided with a rod, B, which is called a "regulator" by the inventor. This regulator makes a bight or loop in the chain, so that the matter desired to plow under is caught by it and diverted toward the furrow, into which it is thrown and covered up, as before explained. The exact shape of the rod is not adhered to in all cases, and the claim covers the use of a rope or its equivalent for the same purpose.

The inventors claim that this is a desirable and useful addition to a plow, and it was patented through the American Patent Agency on March 7, 1865, by Josiah Kilmer. For further particulars address, J. & A. Kilmer, Barnerville, N. Y.

The Public Debt of Great Britain.

In the budget recently presented by Mr. Gladstone to the British Parliament it is stated that on March 31, 1859, the total public debt was £825,934,000, and on March 31, 1865, it was £808,288,000—showing a decline of £17,646,000, or at the rate of about three millions of pounds sterling per annum. In 1859 the total amount of the trade with France was £26,431,000, and in 1864, £49,797,000, or nearly ninety per cent increase. The revenue for the financial year of 1864-65 amounted to £70,313,000. The expenditures were £65,957,000—showing a decrease as compared with those of 1860-61, the year of the highest expenditure, of £6,547,000 since the Russian war, but an increase of nearly twelve and a half millions as compared with the ordinary expenditures immediately antecedent to that period. The whole trade of the country, which last year was valued at £445,000,000, had increased during the year ending on the 31st of December, 1864, to £487,000,000, the imports being £274,000,000 and the exports £213,000,000. Those who argue that a preponderance of imports over exports is opposed to the commercial prosperity of a nation receive a practical refutation of their theory in these conclusive figures. The estimated income for the financial year just entered upon is £70,170,000, and the expenditures, £66,139,000.

THE manufactory of Saint-Gobain, France, has been engaged six years in fabricating a lens two feet in thickness, which it has now given as a present to the Observatory of Paris for the large telescope in course of being manufactured, the power of which will exceed that of the most powerful instruments known.

Velvet Factory to be Started.

The Paterson (N. J.) *Press* says that the business of that thriving town is to be increased by the establishment of a factory for the manufacture of silk plush velvet, which will be a novelty in the United States. It seems that a company of capitalists, mostly Englishmen, some time since obtained a charter from the Legislature of the State of New Jersey, and having imported the requisite machinery and brought over a number of workmen, commenced their work in Newark, but, considering Paterson a more desirable locality, they are now making extensive preparations for their works in that town. Thus are we from time to time rendering ourselves independent of foreign workshops and supplying ourselves with establishments that will produce every article required for the use of our people. Our cotemporary say: "We are informed that parties in England, who use the fabrics such as this company will make, expect to import them from this country. Some Frenchmen will doubtless institute the manufacture of kid gloves, instead of our people taking hold of the enterprise. The leather-glove trade is one of the most valuable we have, but we do not know that any factories make kid gloves.

A New Enterprise in Buffalo.

The City of Buffalo is becoming famous for its manufactures, especially of steam engines, there being several large founderies and machine shops engaged in that business.

Recently, Mr. David Bell, one of the enterprising citizens of the place, has commenced building locomotives, and one named after him has recently been tried. The *Buffalo Courier* gives the following description of the engine:—

The *David Bell* is one of two locomotives which Mr. Bell started, on his own account and capital, to build last winter. The later stages of their construction were closely scrutinized by Mr. Grant, upon whose recommendation both were promptly purchased, at the highest ruling prices, by Wm. Scott, Esq., President of the Erie and Pittsburgh Road. The sum paid for the two is $50,000, with the addition of the Government tax. The *Bell* is one of the largest class of locomotives, built as a "compromise" engine, and hence equally suited for freight or passenger work. Its cylinders are 16-inch bore and 24 inches stroke.—The driving wheels measure 5 feet 1½ inches.

The boiler is built for the use of either coal or wood, and is fitted with 150 two-inch copper flues. The engine and tender weigh together 40 tuns. Both are finished with elaboration, durability and elegance. The gages and lamps were made by the Buffalo Steam-Gage Company. The model and working properties of the engine, as we have already intimated, have been found, so far, faultless. It ran ten miles in thirteen minutes, with ease.

THERE are, unhappily, at the present moment, in Paris, five strikes of workmen, viz.:—locksmiths, tailors, carriage builders, hatters and dyers.

ONE-POUND box of concentrated lye will cleanse foul cistern.

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ANOTHER APPLICATION OF DIALYSIS.

Perhaps some of our readers may not remember the beautiful discovery of dialysis, made a few years since by Dr. Graham, of England. He found that if substances which will crystallize be mingled in solution with others of a jelly-like character, such as gum, starch, dextrin, tannin, gelatin, albumen and caramel, which will not crystallize, and the solution be separated by a porous membrane, such as parchment paper or bladder, from pure water or other solvent, those that will crystallize pass freely through the pores, while the gums are retained. Those that pass through, Mr. Graham calls crystalloids, and those that do not he calls colloids, from the Greek, *kolle* (glue). This discovery affords a new means of separating substances mingled in the same solution, and is therefore called dialysis. At the last meeting of the British Pharmaceutical Conference, held at Bath, the following paper was read by J. Attfield, Ph. D., F. C. S., "On the Application of Dialysis in Determining the Nature of the Crystalline Constituents of Plants":—

Some two years ago (*Pharmaceutical Journal* for March, 1862), I published the results of an examination of the saline efflorescences which are occasionally found on medicinal vegetable extracts. These crystalline out-growths were found to be chloride of potassium or nitrate of potash. The former salt had often been observed, but the latter had not been noticed, although it is of common occurrence. From that examination, it seemed that nitrate of potash was a more frequent constituent of plants than had been suspected, and I then proposed the application of a method whereby the presence of it and of similar salts could be detected in the fresh plant. The suggestion was to dialyze expressed juices, concentrated decoctions or infusions of plants, and then to evaporate the diffusate to a small bulk, when it was to be expected that the nitrate of potash, or any other crystalline salt, would separate out in a solid and recognizable form.

Since that time I have submitted a few plant-juices, the first that came to hand, to the process, and have obtained results which justify me in recommending the method as one likely to be of great service in the study of vegetable physiology. Crystalline salts can be thus obtained which would inevitably be destroyed in burning a plant for its ash. The following are the details of the experiments:—

SOLANUM TUBEROSUM.

A few pounds of potato tops were collected, and at once crushed and pressed and the juice dialyzed for twenty-four hours. On evaporating the diffusate and cooling, small prismatic crystals separated, having all the physical and chemical characteristics of nitrate of potash. Under the microscope they were found to be six-sided, and to twist a ray of plane polarized light, were not volatile, gave a violet tint to flame, and deflagrated on charcoal; the aqueous solution gave a yellow crystalline precipitate with bichloride of platinum, no odor on heating with caustic alkali, a black color with sulphate of iron and sulphuric acid, and yielded ammonia on heating with potash, zinc and iron. It was deemed desirable to apply all these tests in this and similar examinations, as a pound of vegetables seldom yielded more than a few grains of crystals, a quantity sometimes too small to purify crystallization, and always too small to admit of the production of strongly marked analytical reactions. In the case of potato, however, I went to the trouble of operating upon thirty or forty pounds of the tops, and thus obtained about the same number of grains of nitrate of potash, and the extra labor was rewarded, for the mother-liquor of the niter, after standing aside two or three days, yielded a small crop of beautiful little crystals, of which I can at present say but little more than that they were not nitrate of potash. They were perfect little hexagons, not much longer than broad, with flat heads; I suspect them to be a magnesium salt. Beside these constituents, the juice of potato yielded cubes, hollow pyramids, and prisms of chloride of potassium, much ammonia and sugar, even immediately after expression, and other matters the nature of which was not ascertained.

ATROPA BELLADONNA.

The leaves and soft parts of the Deadly Nightshade also yielded nitrate of potash by the above process. But in addition some acicular crystals, single and in tufts, were obtained. These were carefully separated from the niter crystallites, and were recrystallized. They were then found to be prisms, neither deliquescent nor efflorescent, and containing magnesium as the sole inorganic constituent. The nature of the organic matter associated with the magnesium could not be ascertained; apparently it was not any of the ordinary organic acids. The juice of Belladonna also contains ammonia, a matter which reduced copper salts as sugar does, and other bodies not examined.

PISUM SATIVUM.

Several quarts of peas, in the shell, were similarly treated. The product was a thick sirup of light-brown color, yielding no crystals even after the lapse of several weeks. The ash of a portion of it gave a pure potassium tint to flame, and its solution a slight chlorine reaction. Ammonia was also evolved on heating the diffusate with potash, but no nitric acid could be detected. Apparently, therefore, the fruit of the pea contains no nitrate of potash, and only a minute quantity of any inorganic crystalline salt. The chief organic crystalloid is obviously sugar.

LACTUCA SATIVA.

Half a dozen large garden lettuces were next submitted to the process. Here, again, the concentrated diffusate yielded nitrate of potash. The crystals were, however, mixed with many perfect tetrahedra, but in quantity insufficient to admit of chemical analysis. The mother-liquor contained sugar and ammonia.

CUCUMIS SATIVUS.

Several cucumbers were then operated on. They furnished a diffusate, of which the chief constituent was sulphate of lime, but it also gave reactions indicating sugar, and the juice, immediately after expression, and again after dialysis, yielded ammonia on warming with dilute solution of potash.

BRASSICA OLERACIA.

The juice of three or four cabbages, treated in like manner, also gave a diffusate, from which much sulphate of lime separated on evaporation. It also yielded ammonia when heated with fixed alkali, but beside sulphate of lime no crystals were obtained from it.

DATURA STRAMONIUM.

This plant, the Bitter Thorn-apple, I found to contain so much nitrate of potash that a dried portion quite deflagrated on being burned in a muffle.

From these few experiments, it is, I think, obvious that this application of Graham's beautiful process of dialysis promises to be of great service in investigating the nature of the crystalline constituents of plants. It may assist you in extending our knowledge of the natural state of combination of the alkaloids and organic acids; it may demonstrate the presence of salts previously unknown, and may show that salts, hitherto only occasionally met with, are of common occurrence. Moreover, by showing the presence or absence or variation in amount of a given crystalline constituent, it will help us in ascertaining the influence which variations in climate and soil have upon vegetables, will doubtless aid in determining more exactly the office of the various parts of plants, and, lastly, may throw light on the changes which go on at different periods of the life of a plant.

FARMERS' CLUB.

The Farmers' Club of the American Institute held its regular weekly meeting at its Room at the Cooper Institute on Tuesday afternoon, May 23d, the President, N. C. Ely, Esq., in the chair.

FELTED YARN.

Professor Mapes exhibited a specimen of yarn made by a process of felting instead of twisting, and stated that the process was invented some five years ago in France, but had been improved in this country. The wool is formed into threads by being driven through numerous holes in a plate, by agitating the air above it. Coarse and fine wool are mixed in the same thread, and the process works the coarse wool into the middle of the thread, and distributes the fine upon the outside. It is also claimed that the yarn is stronger than twisted yarn!

PRESERVING POSTS AND TIMBER.

Mr. Johnson sent a communication asking whether kyanizing posts with coal tar would preserve them from decay.

Professor Mapes replied that coal tar will not kyanize them. The process of John Kyan was to soak the timber in a solution of corrosive sublimate, the effect of which is to coagulate the albumen. The process has been very extensively tried, and with the most satisfactory results. The Amboy Railroad had a number of sleepers prepared by soaking them in the solution for fifteen or twenty days, and these were laid down in alternation with sleepers not treated, and while the unprepared sleepers have been renewed two or three times, those that were kyanized remain sound. Similar experiments were made at Woolwich, in England, and with like results. But corrosive sublimate is expensive, and various other substances have been suggested. The speaker had tried a number—common copperas, sulphate of zinc, and others, with good effects in degree.

The best plan practically for a farmer is to turn his posts with the little end down, charring the portion that goes in the ground.

Various other matters were discussed, but we select these only for our columns.

WESTERN CORRESPONDENCE.

[For the Scientific American.]

GREAT RAINS OF THE WEST.

All the Western rivers taking their rise in the Rocky Mountains and the great Valley of the Mississippi, and discharging their waters into the Gulf of Mexico through the various mouths and outlets of that river, inundate their banks about every seventh year, or periodically. These inundations overflow large tracts of river bottom and swamp lands in the States of Missouri, Arkansas, Tennessee, Mississippi and Louisiana, covering an extent of surface which, taken in the aggregate, makes a total equal to an inland sea of several hundred miles square. The evaporation from this immense water surface, stimulated by the tropical heat, is carried northward by the prevailing and usual warm south-west winds blowing from Mexico, until, meeting with the regular evaporation of the great Northern lakes, the atmosphere becomes overcharged with vapor, condensation follows, and the result is, that over a large portion of the Valley of the Mississippi, lying north of the mouth of the Ohio, copious and unseasonable rains prevail. This is the periodical year of the overflow; the season is unusually wet, and unseasonable rains may be looked for until the summer heats, acting on the excessive evaporation, rarifies it to such an extent that they check its descent in the form of rain, and all general overflows of the Mississippi and its tributaries are sure to be accompanied with spring and summer seasons remarkable for their wetness.

PROSPECTS OF THE CROPS.

The rains, while seriously retarding the planting of oats, spring wheat in Northern Illinois, potatoes, corn and other spring crops, have a beneficial influence on the grasses and winter wheats, and unless they should continue, and rust the wheats when ripening, the crop in Southern Illinois will be a fair average one in quantity, and of an excellent quality. From seeding up to the present time, the wheat crop has had everything to favor it—the fall was favorable for seeding; the winter was uniform; the spring cool, and the seed sown was fully matured by the warm summer of 1864.

Farmers of late years have adopted the pernicious practice of cutting their wheat some ten days before it has fully ripened, being made to believe that this unripe wheat outweighs the ripe, and the millers pay, or pretend to pay, more for such wheat—because it really does make whiter flour, with similar handling—than for that which is fully matured. In this way farmers have been gradually seduced into cutting and selling unripe crops, and of using seed of the same character; and the millers, to suit the vitiated public taste—by giving a fictitious whiteness to their flour—sacrifice from ten to twelve pounds of bread to the barrel of flour, that being the difference in favor of bread when the flour is manufactured from wheat that has been allowed to ripen.

Unless killed by intense cold, fruits, particularly peaches, are usually injured by a few warm days in the month of February causing the fruit buds to swell; this warm weather is always succeeded by cold weather of sufficient severity to put a stop to the further germination of the fruit for that season.

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The past winter was of a uniform coldness, without being too severe, and the fruit having thus far escaped the spring frosts, which some seasons fatally assail it, our prospects for an abundant crop are quite promising.

METEOROLOGY.

The subject of meteorology is one that should attract more general attention than it does, its laws being comparatively unknown at the present time, and even the most trifling observations, suggestions and experiments made with reference to this important science should be recorded and carefully examined and preserved. We constantly meet with persons of but little general intelligence who can predict almost with certainty some of the approaching changes of wind or weather, by carefully noticing certain indications which are known from their own and the experience of others to be generally correct. Were all the weather philosophy of farmers, sailors, fishermen, hunters, shepherds, stage drivers, and others, collected, it would constitute a volume filled in a great measure with suggestive information; and like the unavailing search after "the philosopher's stone," or fruitless experimenting in the hopes of discovering "perpetual motion," though not resulting in positive success, the very failures and disappointments experienced by the alchemist and the mechanical experimenter have been the means of opening new channels of thought in the minds of others, terminating in the wonderful discoveries of the chemist and the magnificent mechanical contrivances of modern times.

The united historical evidence from the battle-fields and naval engagements of Europe since the commencement of the present century, and of our own battle-field during the rebellion, concur in sustaining the meteorological fact that cannonading affects the atmosphere to such an extent that thunder-storms and heavy rains, or rains alone, almost always accompany or succeed where it has been for many hours heavy and continuous. This war has also demonstrated, what is of more importance to us, that heavy and continuous firing affects the atmosphere not only in its own immediate vicinity, but at hundreds of miles west or north of it, by producing within a few hours sudden, and, in most cases, unseasonable changes of the winds, usually accompanied by cloudy weather or rain without thunder-storms; and in no instance at any season for the last three years has a general engagement been immediately succeeded in this latitude by severe cold weather, the cannonading appearing to have complete control over the currents of air producing cold.

If, then, the cannonading of this war, which was confined to certain lines of latitude and longitude, produced rain in their own vicinity, and at points more or less distant, what effect would cannonading from batteries arranged across the continent on different lines of latitude, and connected by telegraph so as to notify of approaching storms, have on the atmospheric currents? Would batteries, taking St. Paul's as the line of latitude, have dispersed the cold storm of January 1, 1864, thereby preserving from destruction so many valuable animals and fruit trees, or the August frost of 1863, which destroyed half the value of the growing crops of the West? or batteries, taking Chicago as the line of latitude, check the spring frosts that so frequently annihilate our fruit and damage our wheat, after they have escaped all the perils of winter? or at what points should batteries be worked this present season for the purpose of suspending for a short period the rains which are now retarding the planting of the staple crops of the West?

Surrounding the coast of Great Britain there is a system of signals warning mariners of approaching storms, the signal stations being connected by telegraph. If cannonading can disperse those storms, how much more advantageous would it be to the seamen and fishermen than to be compelled to remain in port waiting for the storms to disperse themselves.

These are all points of much interest, and are worthy of being experimented on under the supervision and control of an enlightened and unprejudiced meteorologist. Before the removal of the batteries from the vicinity of Richmond and other points it is the duty of the Government to institute a series of experiments bearing on this subject, which, if conducted systematically and honestly, will certainly, in this latitude, go to sustain the rain theory.

ROPER'S ENGINE.

Messrs. Butterfield & Haven, of your city have just furnished a printing office here, with one of the largest sized "Roper's Calorics." This beautiful piece of mechanism reflects the highest credit on the accurate workmanship of the builders, there being no tantalizing leaks, binding places or drawbacks to retard its erection or standing, the whole occupying but eight hours; its movement from the beginning being apparently as accurate as that of a well-constructed clock.

By connecting with the exhaust of these machines a hollow shaft, on which are placed at proper distances two sheet-iron disks formed like watch glasses, the concaves opposite each other, and similar in their general arrangements to the exhaust disks used by the "London Atmospheric Railway," it is very probable that a large percentage of power might be added to those calorics, this form of exhaust requiring comparatively but little power to operate it. A similar device might be applied to high-pressure engines with advantage; some of your enterprising mechanics should give this a thorough trial; it is entitled to it. Why not apply these machines especially to the heating of buildings, regardless of their power purposes?

The exhaust of the machine would furnish a large amount of heat, or it could be driven into a supplementary dome, and additional heat added before passing off; or an additional pump worked by the machine could drive air into one or more additional domes. The large amount of fresh air which these machines consume should make them the very best and cheapest appliances for heating that is now before the public. J. T. D.

Springfield, Ill., May 15, 1865.

[We are pleased to give our correspondent a hearing, but do not indorse his views.—EDS.

BOOKS AND PUBLICATIONS.

BODEMANN AND KERL'S ASSAYING.—This is a small book of 214 pages, published for the "Berzelius Society," by John Wiley & Son, 535 Broadway, New York. It is translated from the German by W. A. Goodyear, Ph. B., late Assistant in the Sheffield Scientific School, etc. It embraces only that portion of Bodemann's work relating to the assay of lead, copper, silver, gold and mercury. It is intended especially for proficients, and will be regarded by them as indispensable unless they possess the original. The incongruous weights of the German States are not reduced to the French standard, a labor which would have materially increased the value of the translation.

Benzoin as an Insecticide.

As our houses and gardens are always more or less infested with vermin, it is satisfactory to know that benzoin, an article well-known as a detergent, is efficacious as an insecticide. Two drops are sufficient to suffocate the most redoubtable pest, be it beetle, cockchafer, spider, slug, caterpillar, or other creeping thing. Even rats and mice decamp from any place sprinkled with a few drops of benzoin. A singular fact connected with this application of benzoin is, that the bodies of the insects killed by it become so rigid that their wings, legs, etc., will break rather than bend, if touched. Next day, however, when the benzoin has evaporated, suppleness is restored.—*Boston Cultivator.*

[This must be benzine; benzoin is a gum.—EDS.

Rate of Emigration.

The whole number of immigrants who arrived at New York City in the first three days of the week ending the 20th of May, was 4,681. Two steamers arrived subsequently, swelling the total to about 6,000. Another ship was expected, and possibly a steamer, which may bring the figures to 7,000. This is at the rate of 28,000 per month, or 336,000 per annum, at a single port, when the season for large arrivals has not commenced. That begins in June, and usually continues to October and November. We have not seen a report of the arrivals at other places; but every European steamer brings fresh intelligence of the swelling exodus on its way hither, comprehending every nation from the Caspian to the North Sea—every occupation, and that physical ability we can measure from experience.

Correspondence

Are Copper Cartridges Unreliable in Cold Weather?

MESSRS. EDITORS:—In your issue of May 20, I notice a letter from H. W. S. Cleveland, in which the statement is made that "copper cartridges are unreliable in cold weather." Now, this seems so strange and new to me that I am prompted to give my own experience in the matter. I have used a Wesson rifle nearly four years, and in all kinds of weather peculiar to this latitude. During this time I have used not less than one thousand cartridges—possibly nearly double this number—and they have never missed fire but twice. The first instance was a warm day in September, 1863; and, as it had never missed fire before, I was a little surprised; but on removing the cartridge and turning it around half way, it exploded on the first trial. The second instance was a very cold day in December following. After trying this cartridge till the end was full of indentations, I placed it in my pocket for inspection.

Now, what was the cause of these cartridges missing fire? I attribute the failure of the first to the absence of fulminating powder in the part first struck; but the failure of the second was not caused by cold weather, as a close examination proved. On opening this cartridge, I could discover no trace of fulminating powder! Both of these cartridges were taken from the same box. Now if cold weather destroys, for the time, the fulminate in the cartridge, why does it not also destroy the percussion cap? Before we accept this cold-weather theory, let us hear from others. What say you, riflemen?

L. H. PLAISTED.

Woonsocket, R. I., May 22, 1865.

The Trials of a Patentee.

MESSRS. EDITORS:—Not feeling in a very amiable mood, I address you relative to the troubles of a patentee—myself, and others similarly situated. There appears to be an organized band of patent thieves in this place; their *modus operandi* is first to obtain, if possible, power of attorney to sell the patent. If successful the victim had as well engage in other pursuits, for he has given away his patent. If not successful, they try to buy portions of the territory, offering a very small sum, accompanied with the threat that they intend to sell it, with or without your consent, endeavoring to bully a poor fellow to accede to their demand. Both of these methods failing, then some one of the fraternity assumes to be the patentee, who commissions, with power of attorney, the others, and they go forth to victimize unsuspecting parties whenever and wherever they find an opportunity. The difficulty arising from their rascality to the patentee, is his liability to come in contact with persons buying of them, and having to satisfy them that they have been "sold"—to use a slang phrase—which is a serious one sometimes. Now, if there is no mode to bring these gentry to justice there should be. They are irresponsible parties so far as property "comeatable" is concerned.

I hope you will call attention to these pests through your valuable publication, for they are the cause of much of the deep-rooted antipathy to patent venders. I don't care how good a patent a man has to sell, he is looked upon as a swindler—making it a very disagreeable business to persons of sensitive natures. If a law of Congress could be obtained that might reach the offenders more direct, and without such enormous expenses, it would confer great favor upon many honest and poor inventors. A. C. T.

Galesburg, Ill., May 12, 1865.

[We publish our correspondent's letter with the hope that it may lead to the exposure of the characters to whom it refers. If one or two of them could be tried and punished as swindlers, it would speedily break up the practice complained of. Patentees should be very careful not to commission unworthy men to sell their rights. The business of selling patents is just as reputable as any other sanctioned by law, and just as few swindlers are engaged in the business as in any other. There are plenty of rogues in all trades and professions.—EDS.

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Proposed National Monument to Abraham Lincoln, at Springfield, Ill.

MESSRS. EDITORS:—About three miles from Springfield is situated "Oak Ridge Cemetery," one of the burial places of the city. Within the public tomb which is used as a place of temporary interment for the remains of those whose friends do not desire an immediate burial in the earth, in compliance with the wishes of his family, are, for the present, deposited the remains of Mr. Lincoln. Before the wishes of Mr. Lincoln's family had been made known to the citizens of Springfield they had purchased the family property of Mrs. Mather, containing eight acres of land, on which is a valuable house, and constructed a tomb thereon, the whole costing fifty thousand dollars. On this piece of ground they propose erecting some monumental structure of a national character, and are now actively engaged in soliciting, from all parts of the world, subscriptions—limited to not over five dollars—from such as feel disposed to contribute.

For many years to come Mr. Lincoln's remains will have to be guarded with sleepless vigilance, and immediate steps should be taken for their greater security, by enveloping them in masses of ponderous stone and iron, of such size and weight that even friends, with the assistance of the best mechanics, cannot get to them in less than twenty-four hours. At present there are one or two companies of soldiers guarding the tomb, but that is not sufficient security against the Booth sympathizers, many of whom, in retaliation for the unknown disposition of his body, would undertake and accomplish—unless every possible obstacle is presented to their villainous designs—the removal and concealment of Mr. Lincoln's remains. Somebody has acted unwisely in the disposition of Booth's body, and if it can be given up to his relatives sound policy would dictate that they should have it. The probability is that they would not take it, and that would be the end of the matter.

The erection of a testimonial in the form of a mausoleum, commemorative of such a great and good man as Mr. Lincoln, and of one of the most remarkable events in history—to be of a character corresponding with the fame, wealth and power of this nation—should be, architecturally, on the grandest scale, combining evidences for succeeding generations, in marble, stone, iron, brass, bronze and glass, of the skill and qualifications of our artists and artificers. In dimensions, it should be sufficiently spacious for the allotment to each State of the Union of ample room, whereon to erect monumental evidences of their sympathy, surrounding the principal testimonial with sculptural effigies of their noble sons who have made an immortal record during the rebellion. Foreign countries should also have their appropriate places for the expression of their silent regard, and the principal monument itself should be a pedestal on which is erected a statue of Mr. Lincoln—natural size. There is no monumental record that has, or ever will, preserve the memory of the great dead more than a few centuries. History, and their effigies stamped on coins and medals, are the only records to be relied on. Mr. Lincoln has made his history; the people of the United States, acting through their Government, should make the other part. Five millions of dollars worth of gold made into medals, impressed with Mr. Lincoln's effigy, and the suitable inscription, of denominations of five, ten and twenty dollars; one million dollars worth of silver made into medals of various denominations, and one hundred thousand dollars in bronze medals, should be minted at the United States mint and sold for double their value, the profit on their sale to constitute a fund for defraying the expense of erecting the National Testimonial. Those medals would be purchased by his friends, and, in course of time, would get into circulation at their value as money. Many of them would be lost and buried, and thousands of years hence would be brought to light and preserved in the cabinets of the curious.

J. T. D.

Springfield, Ill., May 18, 1865.

A Household Steam Engine.

MESSRS. EDITORS:—May it not be profitable just now to examine the subject, and see if we cannot awake the attention of engineers to the importance of using far less water in boilers than the present system demands?

One cubic foot of distilled water weighs 62½ pounds, and contains 1,728 cubic inches; if we take a second of time as a unit of time, on the basis of evaporating 1,728 cubic inches of water to realize a horse-power per hour, one second is the 3,600th part of the time and also of the water, or 0·48 of a cubic inch, being in weight 121·53 troy grains, or a trifle less than a half cubic inch of water to be evaporated per second, to obtain during a second, one-horse power.

As air passes into a vacuum at about 1,800 feet per second, and steam, being specifically lighter, passes with greater speed, it occurred to me that, as we have many engines performing several revolutions in the second, and that as condensation practically takes place instantly, there should really be no serious difficulty in the way of making manageable household motor engines, worked from a boiler containing but a fraction of a cubic inch of water. After many experiments, I was enabled on a small scale to evaporate and condense at the rate of three revolutions per second, using the same water for steam and for a vacuum, thus practically obtaining a condensing engine. I also applied a modified plan to pump water and to drive a foot lathe. In working these motors I kept in view the need of maintaining uniform conditions. The result is hopeful for progress, and I trust the time is not greatly distant when small steam motors shall be as common as are eight-day clocks.

JOHN JOHNSON.

Saco, Me., May 23, 1865.

An Inventor's Letter.

MESSRS. MUNN & Co.—Sirs:—My patent came to hand yesterday all right, and I embrace, with a great deal of pleasure, the earliest opportunity to tender my sincere thanks for the truthfulness and fidelity with which the business has been done on your part. I shall ever feel the greatest pleasure in recommending you to any one wishing to obtain patents, as gentlemen worthy of all confidence. When I first thought of patenting a horse-shoe I supposed I could go to Washington and do the business better than to employ any agent, relying on the old adage, "That if you want business done, send a man; if well done, go yourself." I think, in this case, the rule won't work, as no common man can obtain a patent any other way so cheap or quick as through your agency. Hence I must say I think your institution just the place for inexperienced men to apply who wish to obtain patents. Yours truly,

LORING M. GUITEAU.

Batavia, N. Y., May 12, 1865.

Copper Cartridges.

MESSRS. EDITORS:—Noticing in your issue of May 20th a letter from Mr. H. W. S. Cleveland, stating that copper cartridges are unreliable in cold weather, I would state that for the last three years I have been in the daily habit of firing from 300 to 600 of these cartridges, and I never noticed any miss fire that I could attribute to the effect of cold. I have had some failures from defective manufacture. During the time referred to I must have fired at least 200,000 cartridges. My brother has had an experience almost equal to my own, and concurs with me in the opinion that the temperature has no injurious effect upon the reliability of this kind of ammunition. The cartridges we use are stored in a cold magazine, and are fired in a shed. No artificial heat in either place.

D. W. C. PERRY.

Boston, May 20, 1865.

Advantages of Publishing Inventions in the "Scientific American."

MESSRS. EDITORS:—To show what inventors gain by having their inventions illustrated in your valuable paper, I will state that I have just received an order for one of my stave-dressing machines from Stockholm, Sweden; the parties ordering it having noticed the illustration therein. In fact I have sold a good many machines from the same cause. Hoping that all inventors will avail themselves of the advantage of having their inventions illustrated in your columns, I remain yours, truly,

JASON PALMITER.

Jamestown, N. Y., May 17, 1865.

A Generous Proposal.

MESSRS. EDITORS:—I acknowledge the receipt of two copies of the SCIENTIFIC AMERICAN, with thanks. I read them with pleasure, and would immediately subscribe but for poverty. Machinery has many charms for me—I love to reason and invent; for this I suffer. I have invented a machine that will work perpetually, and would like to give the invention to Gen. Grant, so that, without further trouble to me, the people of the United States could enjoy the benefit of a "Union Engine." All I ask is credit for the invention, which, for more than four years, I have believed to be the gift of God to man.

GEO. PARADOX HILL.

Davenport, N. Y., May 18, 1865.

Grafting Roses.

Grafting roses is not like grafting apples and pears; it is more of an intermediate process between budding and common grafting; the rose-grafters merely take a thicker slice of wood behind the bud than is done in budding—say a thicker and a little longer slice, and one bud only; then the stock needs only a like slice to be cut out of it, and the new bud and slice to be nicely fitted to the part without tongueing or wedging; nothing but to tie on the slice. Supposing you took a slice of bark and wood off a branch, and cut across the bottom to take it out fair, would it not be easy to stick on the same slice again, and tie it round with some soft binding? Of course it would; nothing was ever yet easier to learn in this world.

Rose-grafting is quite as easy, only you take the slice from a different branch, which is all the difference. But clever practitioners do it still easier. They cut off the head of the rose stock, and leave only a little stump out of the pot; from the top of this stump they slice off about 1½ inch down, and make a cut across the bottom of the slice, which leaves a notch there, and on that notch they rest or fit the bottom end of the graft slice, then cut the top end of the slice square with the top of the stock, tie and clay; sometimes they do not clay at all, but it is usual for ordinary people to put on a little clay for all kinds of grafts.

The best way to clay a rose graft and all pot grafts is, to put a lump of clay in a pot saucer and as much water as will make it into a soft paste, like very thick paint, and with a little brush paint the stock and graft all round, then dust it over with sand, which will keep it from cracking, and all is finished. Gardeners make their own brushes for this work; a bit of soft matting tied on the end of a stick like a pen holder is all they require. When you hear of people grafting roses in-doors, the plan is still more easy. There is no pot or mold, only so many rose stocks lifted out of the ground on purpose, and any of the ways of grafting will do.—*Journal of Horticulture.*

Subsidence of the Earth's Crust.

The commune of Buonanotte, in France, is hourly menaced with utter destruction. Five manufactories have already been overthrown, and sixty-four more are threatened with imminent ruin. The inhabitants have fled in the greatest consternation to the neighboring villages. The cause of the disaster is a sudden and violent depression of the soil, which is at the present time accounted for by one of two reasons—either the fall of an immense mass of earth in the west of the district, or the yielding of the roof of an extensive subterranean cavern. But in reality nothing certain is yet known as to the cause of this most deplorable event. A number of civil engineers have hastened to the spot, and prompt measures are in course of adoption to prevent still greater disaster

Life-saving Apparatus.

Signor Vallo, of Philadelphia, informs us that he has just patented an invention to prevent the wheels of railway cars from running over persons, who, from accident, may fall on the track. It is to be thoroughly tested on Tenth and Eleventh streets, of that city, shortly, and if successful he is to receive $25,000 for the right for the United States. He intends having the invention illustrated in the SCIENTIFIC AMERICAN, with a full description.

IN the dwelling houses lighted by gas, the frequent renewal of the air is of great importance. A single gas-burner will consume more oxygen, and produce more carbonic acid to deteriorate the atmosphere of a room, than six or eight candles.

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Improved Hollow Auger.

Hollow augers are generally used by wagon makers and wheelwrights for tenoning the end of the spoke where it enters the felly; they may be used, however, on any other work requiring similar treatment.

This auger is remarkable for the celerity with which it can be accurately adjusted to any desired size. This is done by turning the plate, A, Fig. 2. This plate is also shown in Fig. 1. The ends of the jaws, B, are received in the scroll grooves, C, and the jaws themselves are forced in or out by turning the plate in one or the other direction. Two of these jaws have cutters, D, while the other two are guides to prevent the cutters from taking hold too rankly. When the cutters are set properly they are held fast by turning the nut or collar, E, at the back. This auger is intended to be used with a brace or power, and has a square shank or rod on one end to adapt it for either purpose. Mechanics using these tools will find this one convenient. One especially for chairmakers' use is now in course of manufacture. It is made by the Douglas Manufacturing Company; address them or Sargent & Co., at 70 Beekman street New York.

Fig. 1

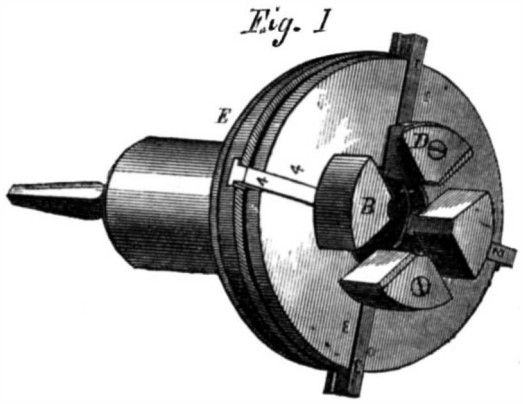
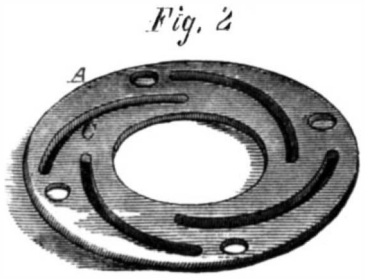


Fig. 2



EXPANDING HOLLOW AUGER.

GRAPERIES AND HORTICULTURAL BUILDNIGS.

One of the most delightful objects of interest to be met with in the city of Paris, in the month of June, is the extensive exhibition and sale of rare and beautiful flowers. The art of flower and fruit culture has attained much greater perfection in France and England than in this country. We are a bustling, money-getting people, and, as a general thing, consider the time given to mere flower culture as so much wasted. This taste, however, we are happy to observe, has greatly improved within a few years, and the business of the nurseryman in this department is now quite large. An extensive grower of hot plants, from information carefully gathered among his fellow nurserymen, estimates that the plant trade of the vicinity of New York reaches nearly the sum of $200-000 annually. One cultivator has stated, that during the fall of 1863 and winter of 1864, he cut and sent from his establishment 230,000 blooms of the various flowers he cultivates.

Small greenhouses or conservatories attached to dwellings are now frequently met with, both in city and country, and when joined to the dwelling to be entered from some one of the principal rooms, forms a feature of great attractiveness and pleasure.

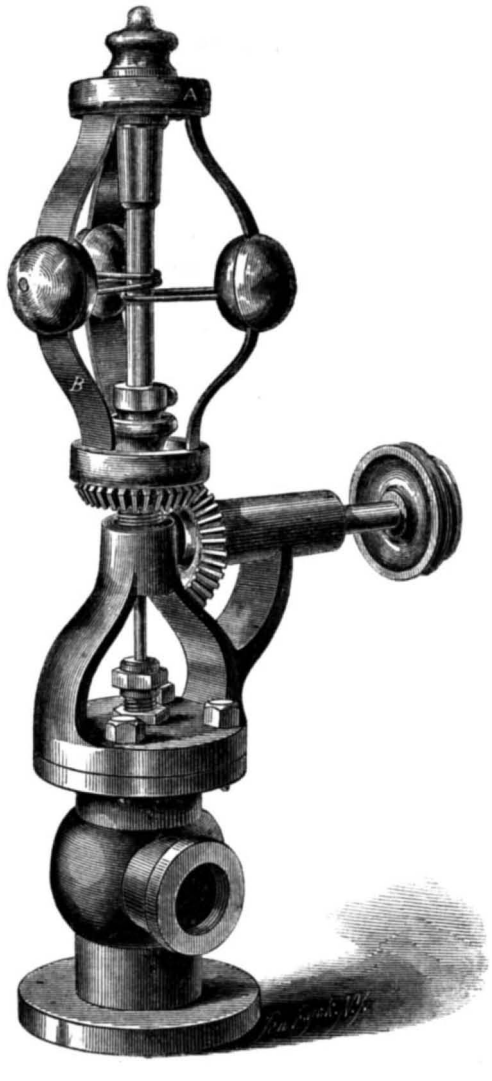
The culture of choice varieties of exotic grapes is also rapidly increasing, both in hot and cold graperies. The luscious Frontignac and the Hamburg will repay the care and expense of a well-constructed glass-house for their propagation. There is no great mystery in regard to their culture, for any person of ordinary capacity can soon learn how to manage them. One of the most important things connected with the cultivation of rare grapes and flowers is to have a thoroughly-constructed glass-house. Information upon this subject is fully supplied in a recent volume entitled "Woodward's Graperies and Horticultural Buildings," just published by Geo. E. and F. W Woodward, No. 37 Park Row. It contains twenty designs, and supplies a great amount of practical information hitherto difficult to be obtained except from professional men.

The Oil Regions.

A disgusted newspaper correspondent in the oil regions writes to a Cincinnati paper from Oil City:—"It is really astonishing to what indignities the people who are hunting oil will submit. The hotels are crowded and dirty. The street is one sea of diluted mud, which the struggling horses splash and splatter all over the houses and people. It is worth the price of a good suit of clothes to promenade Main street in Oil City for two days. But oil seekers do more than this. They go on foot up the creek to the 'oil diggings,' over such roads as they never before walked on. And here, too, they are subjected to the same splashing process that prevails on the streets of the city. The road is but a continuation of the streets in all respects, and the pedestrian finds every tired horse or mule on the way just in the act of stumbling over some hidden rock, at the critical moment when his blundering foot can scatter most of the diluted mud. The result of this state of things is apparent. Thousands who come to see are satisfied—no, disgusted—with the first night, and rush away by the morning train. It requires the impetus of a sure prospect of gain to induce one to remain more than a day, while only those who are making a 'pile' will consent to live here."

PICKERING'S GOVERNOR.

A very noticeable feature in this governor is its simplicity. It is free from joints and pins that must



fit tightly to operate properly, and has the fewest possible pieces to obtain the desired end—a certain and rapid control of the motion of the engine.

In detail, this governor is merely an upright shaft, with two brass heads, A, one of which is connected to it, while the other—the top—is movable on it. The springs, B, are fastened to these heads at the top and bottom, and when rotary motion is applied to the shaft the balls on the springs fly out, precisely the same as with the old-fashioned governor; this causes the top, A, to move down on the shaft and depress the valve stem, which runs through it, thus regulating the flow into the steam chest of the engine. The valve itself is balanced, and is a cylinder with circular openings.—The speed at which this size runs is 475 revolutions per minute.

Large numbers of them are in use in various parts of the country, and in a recent visit to this office the inventor informed us that he was much behind his orders. It is very reliable, not apt to get deranged, and, in other respects, suitable for the purpose required of it.

This invention was patented through the Scientific American Patent Agency, Oct. 7, 1862, by Thos. R. Pickering, of New York; for further information address Pickering & Davis, No. 144 Greene street, New York City.

New Apparatus for Compressing Air.

An English journal thus speaks of a new method of compressing air, lately designed abroad:—

An improved apparatus, by means of which atmospheric air or gases may be compressed in volume to a far greater degree than has yet been accomplished by other means, such highly compressed air or gas being applicable to various useful purposes, has been provisionally specified by Mr. T. Coughin, of Bermondsey, England. He proposes a succession of pumps and receivers, the first pump receiving a supply of air from the atmosphere, and forcing the same into a receiver, whence it is conveyed to a second pump, already compressed; the second pump is then brought to bear upon the compressed air, which is then forced into a second receiver, and so on to a third or further series, and ultimately into a chamber or receiver of any kind or form, according to the purposes for which it is required. He proposes to make the diameter of the first pump larger than the second, and the second larger than the third, in order to compensate as far as possible the power required to actuate each according as the air or gases are more and more highly compressed in each. The pumps are to be set on a suitable foundation, above which, on standards, a shaft and fly-wheel are supported, to be turned by hand or steam power; on the shaft an eccentric or crank is keyed, in order to work the plunger of the first pump. The shaft is also provided with a cog wheel or pinion, on each side of which is a shaft and toothed wheel gearing with the central pinion, in order to actuate by similar eccentrics the other two plungers of the pumps. If more pumps are required they may be connected by similar gearing. The toothed wheel actuating the third pump should have a greater number of teeth than the second, in order that it may travel at a slower rate to operate upon the densely compressed atmosphere or gas; underneath, or at the side of each pump, is its receiver, connected by suitable tubes and valves, the whole series of pumps and receivers being thus in communication.

A METHOD has been discovered in Belgium to obtain a photographic groundwork for oil paintings. Fine canvas or silk, such as is employed for small and delicate works, is used. The process is simply to cover the surface with a preparation of collodion and chloride of silver, and expose and prepare it in the ordinary manner, just as in the case of paper.

THE King of Italy intends sending to the International Exhibition at Dublin a topaz weighing several pounds, and eight or nine inches long, having on it a beautiful engraving of "The Last Supper."

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NEW YORK, SATURDAY, JUNE 3, 1865.

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LEATHER BANDS.

The horse-power of belting or the tractive force exerted by leather bands of a given width, at a certain speed expressed in foot-pounds, or in any other positive way, is not generally known. We do not know what it is, although we have some half dozen rules professing to give a unit for a horse-power, which are obviously incorrect. A horizontal belt of a given length will drive more than a vertical belt of a given length; a long belt more than a short one, and a twisted belt more than either, because in the case of the horizontal and the long belt, the sag and weight tend to produce closer contact and resist strain better than where the belt merely hugs the pulley by its tension; the same is true of the crossed belt, which embraces more of the circumference of the wheel driven.

Eight hundred feet per minute velocity for a one-inch belt is said to give a horse power; four hundred for a two-inch belt will give the same; but these statements appear so crude and unsatisfactory that we place no reliance on them, and we want more facts and less fancy when dealing with such subjects.

The dynamometer affords an easy, simple and cheap method of testing strains, or the transmission of power from one machine to another, and a few experiments by it would settle forever all doubts and uncertainty on this point. The dynamometer merely weighs strain as a butcher weighs meat, and with the same instrument—a spring balance. If a lever be made with a bearing, cap and bolts at one end, and the same fitted to a shaft, and if a spring balance be applied to the other, by weighting the lever until it balances the tendency to raise imparted to it by the shaft, we shall have an exact record of the actual number of foot-pounds of work or strain exerted by the machine tested, when the relations between the diameter of the shaft and the length of the lever are considered. Of course, with such a dynamometer there is great friction, and if the test is continued long, much heating on the shaft occurs, which would interfere with a correct result; one sufficiently correct for practical purposes may, however, be obtained if the experiment be made properly.

There are many other forms of dynamometers for weighing or observing the force of machines, but it seems unnecessary to consume space with details of them, when it is apparent to all persons, who would be likely to undertake the experiments here recommended, what such apparatus should be.

Some things relating to the action of belts are but imperfectly understood, for although Morin's experiments have demonstrated the relative resistances of belts on pulleys of different materials and surfaces, such as rough cast iron, smooth cast iron, wood, etc., he has not informed us of their position, their nature, whether vertical, horizontal or twisted, and whether the ratio of resistance increases in regular progression from a belt one inch in width at 400 feet up to a belt 30 inches wide, at the same velocity. It is obvious that these matters exercise a great influence on the transmission of power by belting.

From an experiment at one of our largest machine shops, it was found that gearing absorbs less power than belts, and that the force required to work the latter is extremely variable, depending upon the tension, the condition of the surface of the pulley, and minor matters. This fact was deduced from observing the working of a fan blower, and is to be received with caution, for it has hitherto been supposed that gears consumed more power than bands, and these results may be due merely to the peculiar arrangement of this special machine. It is a fact, however, that the use of sawdust, resin, or similar substances, to increase the adhesion of the belts to pulleys, as also the employment of idler pulleys, or rollers suspended against belts to keep them up to their work, also the divergence of belts from right lines or carrying them at acute angles about rollers fixed in walls, add greatly to the expense of working them.

Since belts are so universally employed, a series of experiments on this subject would be invaluable, and we hope that those who have the time and the means, as well as others who possess experience derived from actual practice, will send us what information they may possess on this subject.

LETTERS FROM THE PEOPLE.

It is our custom to appropriate each week a liberal space in our paper to the publication of letters from our readers. These contributions we esteem of much value; they are always acceptable. The only complaint we have to make is that so few, comparatively, of the many thousands of readers of the SCIENTIFIC AMERICAN avail themselves of this open medium through which to make known their thoughts and experiences. In all the departments of science, art, and industry, there are practical subjects which ought not to be locked up from the reading public.

Many intelligent manufacturers and mechanics hesitate about writing to the editor of a newspaper for fear of some unfriendly criticism upon their productions; hence, under this mistaken idea, they withhold the expression of their views, and the people are thus deprived of much valuable information. We wish to urge upon our readers, of every trade and profession, to constitute themselves our correspondents. They need not fear captious criticism, but in all cases their contributions will receive careful and considerate attention, and if admitted to our columns the writers will not have to regret that their thoughts are not clothed in good apparel.

We especially urge our mechanics to send us communications, giving the result of their practical knowledge. By adopting this suggestion, they will not only benefit themselves, but will also assist their fellow-workers who may be following the same trades.

PETROLEUM FOR STEAM SHIPS.

The idea of using petroleum for generating steam has appeared to us from the beginning of the discussion so preposterous, that we have incumbered our columns with very little matter in relation to it; but our attention has just been called to it in a way that prompts us to give a statement of the few controlling facts that settle the question, some Spanish gentlemen having called upon us with a letter from a Spanish official requesting information on the subject.

Anthracite coal is worth at the present time about one third of a cent per pound, and crude petroleum is worth about four cents per pound—twelve times as much. For petroleum to be economical, therefore, for generating steam, it must be twelve times as efficient as coal.

According to the nice determination of Favre & Silberman, 1 pound of carbon in burning generates sufficient heat to raise the temperature of 8080 lbs. of water one degree of the centigrade scale. Twelve times this is 96,960, which is consequently the number of pounds of water that must be raised one degree in temperature by the burning of one pound of petroleum, in order to make that substance more economical than coal. Now, the substance that generates in burning more heat than any other, is hydrogen gas, and a pound of this will raise the temperature one degree of only 34,462 lbs. of water.

We find no record of direct experiments upon the heating power of petroleum later than those of Count Rumford, and these gave a result of about 7,000 units; but, though he was a very careful observer, the later experiments of Andrews and of Favre & Silberman were made with so much better instruments, and with so much greater knowledge of the conditions, their determinations in relation to other hydrocarbons will doubtless be received as a better indication of the heating power of petroleum than Rumford's direct observations upon that substance. With five hydrocarbons, composed of the same elements as petroleum and in about the same proportions, Favre & Silberman obtained the following results, the figures being the number of pounds of water raised one degree, centigrade:

Olefiant gas.....C_2H_4	11,858
Amylene.....C_5H_{10}	11,491
Paramylene.....$C_{10}H_{20}$	11,303
Cetene.....$C_{16}H_{32}$	11,055
Metamylene.....$C_{20}H_{40}$	10,928

From the similarity of its composition with these substances, it is doubtless safe to infer that petroleum in burning will not raise the temperature of more than 12,000 times its weight of water one degree of the centigrade scale; that is, once and a half times as much as carbon. Therefore for it to supersede coal it must be sold at about one-eighth of its present price—four cents per gallon.

THE ART OF OBSERVATION.

No subject that has been broached in our columns has excited a wider interest among our readers than the question, whether a piece of solid metal will float on a mass of the same metal melted; and one of the most curious features in the discussion is the striking contrast in the result of experiments by different observers. In the report of the proceedings of the Polytechnic Association, published on another page, it will be seen that Mr. Smith, a remarkably capable observer, has just tried an experiment which convinces him that a piece of solid zinc will always sink in a mass of molten zinc, while Dr. Rowell, an observer not less competent, asserts that he has tried the experiment twenty times, and if the temperatures are nearly the same solid zinc will always float on melted zinc.

In a certain stage of intellectual development men are apt to conceive that the highest prerogative of genius is the construction of theories, but Agassiz says, that the last and most difficult acquirement in the culture and growth of the mind, is the art of observation. The longer any man lives and the more intercourse he has with the world, the more will he be impressed with the uncertainty of human testimony; not from the disposition of people to tell falsehoods, but from their carelessness of observation and of statement.

We shall, doubtless, some time receive a paper giving an account of a series of experiments undertaken by some experienced and wholly competent observer, which will settle this question in relation to the floating of metals. In such a paper we shall have a full description of the apparatus employed, a statement of the methods adopted to obtain the metals perfectly pure, and to test their purity, of the means for measuring the temperatures of both the molten and solid masses, and finally of all the conditions which could in any way vary the results. To give such a paper any value among men of science, it must be manifest that the observer's mind was not obscured by preconceived notions, but that he had singly in view to arrive at the exact truth, and that he had sufficient knowledge of the metals, and of the influence of changes in their physical conditions, to conduct his experiments in a way to lead to positive results.

It is impossible in one short article to point out all the numerous sources of error, but it is very certain that whoever enters the field of original research in physical science, will, at every step, discover new reasons for being cautious in regard to his conclusions, and will receive new lessons in relation to the importance of intelligence, method, care and thoroughness in making observations.

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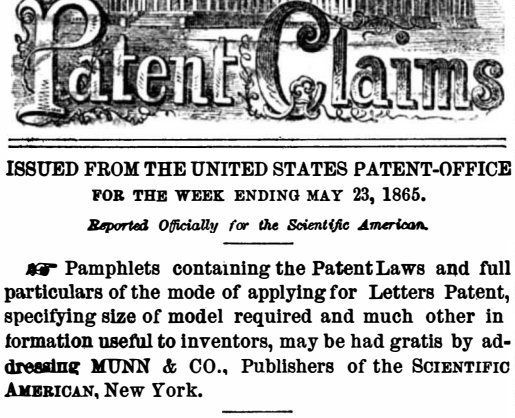

ISSUED FROM THE UNITED STATES PATENT-OFFICE

FOR THE WEEK ENDING MAY 23, 1865.

Reported Officially for the Scientific American.

☞ Pamphlets containing the Patent Laws and full particulars of the mode of applying for Letters Patent, specifying size of model required and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

47,781.—Brush.—Albert Alden, New York City:

I claim the notched segm ntal plates, B, in combination with the head, A, handle, C, and with the pivot, a, and spring catch, b, all constructed and operating in the manner and for the purpose set forth.

47,782.—Hoisting Apparatus.—George Ambrose, New York City:

I claim, First, A hoisting apparatus which employs an elevator, C, adapted for receiving and holding in place hods, or other portable vessels, guideways, A, A, pulley rope, c, pulleys, a, b, and drums, e, f, g, together with a brake, all arranged and operating substantially as described.

Second, Providing the elevator, C, with racks, which are adapted for receiving and retaining in place portable hods, s, s, substantially as described.

Third, Spring latches, m, m, and levers, n, n, in combination with the guides A, A, and elevator or hod-rack, C, substantially as described.

47,783.—Kitchen Range Boiler.—Joseph H. Ash, Brooklyn, N. Y.:

I claim the improvement herein described in the manufacture of copper boilers, the same consisting in forming in each head of the boiler, a suitable groove or channel having parallel concentric walls perpendicular to the bottom extending entirely around the same, in which the body of the boiler is placed, and soldered in any proper manner, substantially as above described, and for the purposes specified.

47,784.—Machine for Lubricating Bullets.—Albert Ball, Worcester, Mass.:

I claim, First, The combination with a cylinder or proper receptacle for holding the bullet, of an opening to admit the lubricating matter to the groove in the bullet, and a vent hole for the escape of the air, substantially as described.

Second, The combination with a cylinder or chamber for holding the bullet of a resorvoir or resorvoirs for holding the lubricating substance, and a plunger or its equivalent for forcing the lubricating matter while cool into the grooves in the bullet, substantially as set forth.

Third, The combination with the bullet cylinder, C, of the piston, D, and valve, H, substantially as described.

Fourth, The construction and arrangement of mechanism in such a manner that bullets may be sized, and their groove or grooves filled with a lubricating substance at one and the same operation.

47,785.—Shears for Marking Cat le.—Silas D. Baldwin, Chicago, Ill.:

I claim, First, The adjustable blade, I, when provided with a conical-shaped edge so as to give it a shear cut.

Second, The slot, h, in the back of the blades, I, and J, in combination with the screw, b.

Third, The combination of the conical edged blade, I, handles, A and B, with the set screw or guard, D, to regulate the width and depth of the incision.

Fourth, The plate, F, provided with the projection, G, and slots, c, d, or e.

Fifth, The conical blade, H, in combination with the projection, G.

Sixth, Placing two or more shear blades on a single arm of a pair of shears.

Seventh, In combination with the cutting devices herein described, I claim the adjustable blade or die, J, in the manner and for the purpose set forth.

Eighth, The lubricating depository or cup, C, when attached to the handle or arm of a pair of shears.

Ninth, The combination of the slotted plate, F, blades, I, or H, spring, E, and guard, D, with the handles, A, and B.

47,786.—Gas Burner.—John A. Bassett, Salem, Mass.:

I claim a burner for burning carburetted air or gas, having the parts arranged and constructed substantially as herein described and set forth.

47,787.—Gas Burner.—Herman Berg, Union Hill, N. J.:

I claim a gas burner provided with a chamber, c, containing pulverized carbon or other absorbent material, and with a spring valve, g, closing up on an aperture, f, by the pressure of the gas, substantially as and for the purpose set forth.

47,788.—Rendering Pan.—Andrew Black, New York City:

I claim, First, The radial openings, a, a, sliding dampers, b, b, and split horizontal circular flues, D, E, the whole arranged in relation with each other, and with the fire-place and pan, substantially as herein described for the purpose set forth.

Second, The combination of the perforated false bottom, G, and the rotary stirrer arranged between the said false bottom and the bottom proper of the pan, substantially as and for the purpose herein specified.

Third, Providing a melting pan with a cover, N, having an outlet to a drain or sewer, but otherwise closed, substantially as herein described.

Fourth, The employment in combination with the cover of a melting pan having only an outlet to a drain or sewer, of a system of collecting plates, R, R, gutters, n, n, q, or other equivalent surfaces for the collection of condensed steam or other vapors eliminated from the melted fat contained in the said pan, and the conveyance of the same to the outlet of the cover, substantially as herein specified.

Fifth, In combination with the cover of a melting pan having only an outlet to a drain or sewer, I claim a condenser arranged between the said outlet and the drain or sewer, substantially as and for the purpose herein set forth.

47,789.—Bed Bottom.—Charles D. Blinn, Port Hudson, Mich.:

I claim the bed bottom above set forth, constructed substantially as herein described.

[This invention consists in a novel construction of spring-bed bottom, the elasticity of which is produced altogether by wooden slats connected to each other and to the bedstead in a peculiar way, so that the frame of the bed bottom is affected by pressure on any part of it, and its different parts are made to bear a share of the load.]

47,790.—Steam Boiler.—Charles T. Boardman, Pawtucket, R. I.:

I claim, First, The arrangement of the two cylindrical boilers, A, A, the tubular boiler, B, and the laterally inclined connecting water legs, C C, substantially as and for the purpose herein specified.

Second, In combination with the two cylindrical boilers, A, A, tubular boiler, B, and walls, D, D, of their setting, I claim the pier, E, and connected parallel upright walls, F, arranged substantially as herein described.

Third, I claim the gas and air-mixing chamber, H, bridge wall, I, and air duct or ducts, b, in combination with each other, and with the bridge wall, J, pier, E, and ash pit, 4, substantially as herein set forth.

Fourth, I claim the combination of the boilers, A, A, B, fireplace, G, mixing chamber, H, side flues, d, d, and return flue, g, the whole arranged substantially as and for the purpose herein specified.

47,791.—Automatic Boiler Feeder.—Joseph N. B. Bond, New York City:

I claim the expansible pipe, B, arranged in combination with the tank E, and boiler A, substantially in the manner and for the purpose set orth.

[This invention consists in the employment or use of a pipe made of brass or some other material, which expands greatly by the influence of heat, said pipe being secured in suitable rigid bearings at a level with the mean water line of a steam boiler, and made to communicate with the water and steam space of the same in combination with a tank, situated above the boiler, and supplied with water from a suitable reservoir, and also made to communicate with the steam and with the water space of said boiler in such a manner that when the water in the boiler sinks below the mean water-line the expansible pipe is exposed to the direct action of the steam and thereby caused to buckle up, and by this action a cock is opened and steam admitted to the upper part of the tank, causing the water contained therein to sink down into the boiler, and when the water rises above the mean water-line, the expansible pipe cools off and recedes to its original position, and the further supply of water to the boiler is stopped.]

47,792.—Steam-Engine.—George B. Bray on, Boston, Mass.:

First, I claim the variable and self-adjusting cut-off, arranged and operated by the governor as described, for equalizing and rendering uniform the action of steam-engines.

Second, The combination with the ordinary slide or D-valve of auxiliary steam ports and slide valves, under the arrangement and for operation in the manner substantially as set forth.

Third, The method herein-described of connecting the oscillating arm with the slide or D-valve, affording yielding connection so as to admit of the valve reciprocating along the plane surface of, and in contact with, the valve face.

Fourth, The method herein-described of operating the auxiliary valves, hung upon the end of an inlet balance beam by means of a rocking lever, yet so as to admit of traverse motion of the balance beam, together with the main valve, substantially as shown and described.

Fifth, Regulating the action of the auxiliary or cut-off valves by means of the cam, expansible by the action of the governor, substantially as set forth.

47,793.—Oil Ejector.—Abel Brear, Saugatuck, Conn.:

I claim in combination with my arrangement of the oil or discharge tube and the blast tube of an ejector, the lower socket, A, constructed with a central passage, a right through it, and with an annular cavity, by surrounding the said passage and communicating with the nozzle, c, arranged within the said passage, substantially as and for the purpose herein specified.

47,794.—Preventing and Removing Scale in Steam Boilers.—Jacob Buzby, Philadelphia, Pa.:

I claim the use of gambar for removing scale from steam boilers as described.

47,795.—Evaporator.—Wm. Canning, New York City:

First, I claim the construction of the rotating disk or disks of a rotary evaporator, of a conical or dishing form, substantially as and for the purpose herein specified.

Second, The arrangement of such disks in such manner that they overlap each other upon a hollow central shaft, in which there are openings between the said disks, substantially as and for the purpose herein set forth.

47,796.—Ship's Defensive Armor.—Stephen D. Capenter, Madison, Wis.:

I claim wrought-iron or steel perforated plates, with dovetail corrugations and the chilled cast-iron facing and backing, with the attached staples, all for the purposes and substantially in the manner herein described.

47,797.—Bed Bottom.—P. G. Chase, Berlin, Wis.:

I claim the improved spring-slat for bed bottoms or analogous purposes, consisting of a camber slat, B, in combination with the spring tension rod, D, connected to the slat at or near its ends, for the purpose of increasing its power of resisting depression, substantially as described.

47,798.—Identifying Ticket for Railroads, Etc.—Anning S. Chittenden, Bergen County, N. J.:

I claim the combination of the several parts herein described to form an identifying railroad or other ticket, substantially as herein set forth and for the purposes described.

47,799.—Broom.—John M. Clark, Dayton, Ohio:

I claim the thin, elastic and yielding wrapper represented in Figure 1, constructed and applied to the brush and handle of a broom, in combination with the ribs, e e, in the manner substantially as, and for the purpose described.

47,800.—Baling Press.—F. F. Cornell, Jr., New York City:

First, I claim the formation of a close chamber in the press by means of the traveling sides of the chamber, substantially as described.

Second, I also claim the side slip, N, in combination with the traveling sides of the press, for facilitating the removal of the finished bale from the press, substantially as described.

47,801.—Iron Railing for Fence.—Sommers Crowell, Philadelphia, Pa.:

I claim constructing the palings, B, with the recesses, C, on each side, having the open side of the recesses on one side of the palings, alternating with those on the other side, thereby forming openings without the use of cores, for the reception of the horizontal bars, A, substantially in the manner hereinbefore described.

47,802.—Washing Machine.—Ephraim Culver, Shelburne, Mass.:

I claim the combination and arrangement of chest, O, and lid, B, with perforated division boards, c c, and beater, D, and wheels, E E F F, and lever, i, and connecting rod, h, operating in the manner and substantially as above set forth, for the purpose specified.

47,803.—Percussion Fuse for Explosive Shell.—John A. Curran, U. S. Army:

I claim the combination of the plunger, h, spring, i, detent spring, j, weight, k, and arm, o, when constructed and arranged to operate as and for the purposes herein specified.

[This invention consists in so constructing a shell as to place the preponderance of its weight forward of the middle of its length, and in forming a groove in its forward part, and fitting a soft metal ring therein.]

47,804.—Boring Tools for Artesian Wells.—Henry H. Daniels, Philadelphia, Pa.:

First, I claim the instrument composed of the plates, A and A', levers, B and B', and guided bar, D, with its projections, ii, the whole being constructed and arranged in the manner and for the purpose herein described, and illustrated in Figures 1, 2 and 3.

Second, The modified instrument composed of the plates, A and A', levers, B and B', guided bar, D, with its pins, g g, or their equivalents, the whole being arranged and operating substantially as and for the purpose herein set forth.

47,805.—Rock Drill.—Julius C. Dickey, Saratoga Springs, N. Y.:

I claim the drill, A, with a circular cutting edge, in combination with the recess C, for the purposes set forth.

47,806.—Saw-setting Machine.—Charles Diston, Philadelphia, Pa.:

I claim, First, In combination with the hammer and anvil of a saw-setting machine, the automatic mechanism herein described or the equivalent to the same, for supporting the back edge of the saw, and elevating and lowering the same in the manner and for the purpose specified.

Second, The feed lever, O, in combination with the cam, H, and spring, g, or their equivalents, whereby the within-described movement is imparted to the said lever, for the purpose specified.

Third, The ledge or projecion, d, and plate, e, arranged in respect to the anvil as set forth, for the purpose described.

47,807.—Harvester.—John A. Dodge, Auburn, N. Y.:

First, I claim the main frame, A, when cast in one single piece in the form and manner described.

Second, In combination with the main frame, A, as described, I claim the arms, B and C, projecting from the front and rear inner corners, for the purpose described and set forth.

Third, In combination with the frame, A, I claim the combination and arrangement of the wheels, e and f; the geared wheels, g and h, and the shafts, c and d, when the shaft, c, is placed beneath the shaft, d, for the purpose of placing the pitman wrist as nearly in lieu with the cutter bar as possible.

Fourth, In combination with the arm, C, and the pulleys, J and a, I claim the lever, H, situated and operating as described.

Fifth, In combination with the main frame of a harvesting machine, and the lifting bar, b, I claim the stirrup, L, as described and set forth.

Sixth, I also claim the self-adjusting pulleys, pivoted at the foot of the reel post, substantially as and for the purpose set forth.

47,808.—Apparatus for Grinding and Amalgamating Ores.—M. B. Dodge, New York City:

I claim the attaching of the shoes to the muller by pivots, or in such a manner that they will work or adjust themselves from a center or from a hinged or pivoted point, with or without springs, substantially as set forth.

47,809.—Breech-loading Fire-arm.—William H. Elliot, Plattsburgh, N. Y.:

I claim, First, The combination of a hammer, d, with a swinging breech plate, c, and a brace, e, when these devices are pivoted together substantially as described.

Second, Attaching the main spring, k, to swinging breech plate, c, by means of a pivot, u, substantially as and for the purpose herein specified.

Third, So arranging the attachments of a main spring to a hammer and to a swinging breech plate that the power of the main spring shall tend to throw the breech plate forward when the chamber is closed, and to throw it back when the chamber is open, substantially as herein shown.

Fourth, Operating upon the point of the trigger to prevent it from catching into the full cock notch by means of cam, S, when both the breech plate and hammer are thrown back together as herein described.

Fifth, So constructing and operating the hammer and brace in combination with a swinging breech plate, that said hammer and brace cannot both be moved at the same time, substantially as and for the purpose herein set forth.

47,810.—Composition for Lining Petroleum Barrels.—John Fox, Philadelphia, Pa.:

I claim the composition made substantially as above described, for sealing barrels and other vessels as set forth.

[This invention is designed to make wooden vessels impermeable to liquids, and it consists in applying to its interior surface a composition which will fill its cracks and joints and fill and cover the pores of the wood of which the vessel is made, so that liquids of a highly penetrative character, such as petroleum, cannot pass through the vessel.

47,811.—Manufacturing Watch Keys.—George H. Fuller, Pawtucket, R. I.:

I claim making a winding key or key pipe in the manner and on the principle substantially as herein described.

47,812.—Drill Bit.—Wm. W. Grier and Robert H. Boyd, Hulton, Pa.:

We claim a drill or bit having the notch or recess at its central point as above described, in combination with the serrated cutting lips, a' a', substantially as shown and described.

47,813.—Sheep Rack.—Benjamin Griffin, Lawrence, Mass.:

I claim the covers, C, the swing doors, E, and the trap doors, H, for the purposes herein set forth.

47,814.—Machine for Making Tobacco Pipes.—Martin R. Griswold, Watertown, Conn.:

I claim, First, The combination of the spindle, E, constructed and operating substantially as described, with the cutter, B, as and for the purpose specified.

Second, The carrier, L, constructed and operating substantially as described with the spindle, E, combined as and for the purpose specified.

47,815.—Toy Spring Gun.—Albert Hall, New York City:

I claim the receiver, E, spring, C, and trigger, D, constructed and arranged, and combined with each other and with the slatted barrel, B, substantially as herein specified.

47,816.—Blind Fastening.—Samuel Hall, New York City:

I claim the fastener, a, constructed substantially as described for the purpose specified.

In combination with the window sash, B, I claim the hasp lock or its equivalent, constructed substantially as and for the purpose specified.

47,817.—Lock.—Wm. Hall, Brookline, Mass.

I claim, First, Fastening the hub by means of the right hand screw, H', through the case of the lock, and the left hand screw, H'', or vice versa, combined with the check nut, v.

Second, Making the stump in two parts, S and S'.

Third, The peculiar arrangement of the lever, L, and the key, T, so that at the time the cog-wheels are thrown out of gear the bolt shall be immovable.

Fourth, The hollow adjusting screws, g, g' g'', g''', all of which operate substantially as described and for the purpose set forth.

47,818.—Pulverizing Tailing from Gold Washers.—James H. Hanchett, Beloit, Wis.:

I claim, First, The grinding disk, C, constructed as shown, and provided with the shaft, B, having the feather, b, thereon as and for the purpose set forth.

Second, I claim the grinding disk, D, provided with the internally geared flange, d, constructed and operating as and for the purpose herein set forth.

Third, In combination with the disks, C and D, and shaft, B, I claim the gear wheels, F and E, E, E, when all the parts are arranged to operate as and for the purpose herein set forth.

47,819.—Drilling and Boring Machine.—Herman Haupt, Cambridge, Mass.:

I claim, First, the employment in machinery for drilling or boring rocks or other hard substances, operated by steam or other electric fluid, of a momentum feed, as described, i. e., a mechanism to finely connect the piston rod with the drilling tool or tool holder in such a manner as that the hold shall be suddenly and automatically released at or before the completion of its forward stroke, to allow of the self-adjustment of the tool in relation to the rock, in accordance with the penetrability and the progress of the work, substantially in the manner set forth.

Second, In steam drills, or drills operated by air or other elastic fluid, I claim the combination, with a hollow piston rod, when used as a tool holder, of a gripper box arranged in the rear of the cylinder and back of the piston rod, substantially as set forth.

Third, In a drill operated by steam or other elastic fluid, I claim the momentum feed, as described, when applied to the translatory movement in combination with a positive rotary feed of the drilling tool, and whether the two feeds are simultaneous, reciprocating or intermittent in their action with respect to each other, substantially as set forth.

Fourth, the arrangement concentrically with the drill or tool of the gripper box, containing a series of wedges held in place to firmly grasp the tool, through the agency of a spring in combination with a stationary anvil ring forward of the gripper box, for operation as set forth.

Fifth, In combination with the gripper box, operating as described, I claim the arrangement for driving the wedges home against the tool, to grasp the same with the full head of steam or the actuating power by, causing the rear end of the hollow piston rod to butt against the heads of the wedges, as described.

Sixth, In combination with the gripper box, constructed and arranged as described, I claim the follower to expand the wedges, for the purpose of releasing the drill tool or tool holder, substantially as set forth.

Seventh, Recessing the stationary cheek or anvil ring so as to leave projecting studs corresponding to similar studs in the forward end of the gripping box, in such manner as that the momentum feed shall be alternated by blows under full head of steam, substantially as set forth.

Eighth, In combination with the means described for producing rotary motion of the tool, I claim the auxiliary ratchet and dog or the mechanical equivalent thereof, for the purpose of preventing the tool from turning back after each rotation, substantially as set forth.

47,820.—Railroad Chair and Coupling.—Wells Hendershott, Batavia, N. Y.:

I claim making a rail chair and coupling, with a base plate, g g, with square flanges, f f, for the side pieces to rest against, with side or splice pieces, b b, having squared shoulders, h h, said splices and base being bolted or spiked to the cross-tie through long slots in the flanges of each side of the rail or bolts may be secured by a key, all constructed substantially as described and for the purpose herein set forth

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47,821.—Embossing and Seal Press.—B. B. Hill, Chicopee, Mass.:

I claim the employment of the fly, h, arranged between the die, n, and bed, a, substantially as and for the purpose described.

47,822.—Fruit Basket.—J. S. Hoard and C. M. Miles, Vineland, N. J.:

We claim the above described berry and fruit basket, constructed as above set forth, as a new article of manufacture.

[This invention consists in a fruit basket composed of any suitable thin material, such as paper, bark or veneers of wood, the body of which is made by interlocking the two edges which come together when the material is bent to a conical or circular form, the bottom being made by dropping a circular piece of suitable size down into the basket.]

47,823.—Apparatus for Cooling Beer.—Julius Hoefer New York City:

I claim cooling beer, or other liquids, (by causing the same to flow downward in the open hollow of the metal pipe, E, and by causing the cold water to rise upward in the inclosed space of said pipe, E, substantially in the manner and for the purpose described.

47,824.—Carpenter's Gage.—Martin Horton, Brooklyn, N. Y.:

I claim the adjustable brad, f, in combination with the brad, d, in the slide, c, arranged and operating substantially as and for the purpose described.

47,825.—Composition for Lining Barrels.—Benoni H. Howell, New York City:

I claim the composition specified for lining barrels for petroleum, etc.

47,826.—Apparatus for Japanning.—Geo. Wolsey Hubbell, Derby, Conn.:

I claim the plan of drawing off or removing the liquid japan from the articles japanned, keeping said articles stationary, whether this is effected by means of the mechanism herein before described, or by means of a pump, syphon or any mechanical process whereby the liquid japan is removed from said articles leaving them stationary.

47,827.—Device for Covering Rollers for Wringers.—R. B. Hugunin, Cleveland, Ohio:

I claim the clamp plates, A A, moving or folding blades, B B, and projections, C C, substantially as and for the purposes specified.

47,828.—Apparatus for Separating and Concentrating Ores.—Andrew Hunter, Solano Co., Cal.:

I claim the formation of the troughs, B B, with metallic bottom alternately inclining and level, as shown by line, a b c d, substantially as described, and for the uses and purposes set forth.

I also claim the combination of these troughs with the troughs, E E G G, stop-cock, H, hangers, D D', spring, S S, or their equivalent, by adjustable connecting rods, I, giving an oscillating and vibrating motion, all substantially as herein before set forth.

47,829.—Knitting Machine.—Edward E. Kilbourn, New Brunswick, N. J. Patented in France, Jan. 6, 1864:

First, I claim the combination of the carriage of a travelling needle in a knitting machine, with the mechanism for moving it past the other needles of the machine in such manner that it can be readily disengaged from said mechanism and re-engaged therewith, substantially as set forth.

Second, The combination of the instrumentality through which the pattern mechanism operates upon the traveling needle, or upon the instrumentalities for withdrawing or replacing the regular needles, with the carriage of said needle, or of said instrumentalities, substantially as set forth.

Third, The arrangement of the movable cam plates in a knitting machine above the devices which they operate upon, substantially as set forth,

Fourth, The arrangement of the pattern mechanism of a knitting machine above the needle carriage, substantially as set forth.

Fifth, The combination of the pattern barrel of a knitting machine with mechanism for changing its relationship to the device upon which its pins operate, substantially as set forth.

Sixth, The arrangement of the pins of a pattern barrel in two helical lines commencing at the opposite ends of the barrels, substantially as set forth.

Seventh, The combination of a cam for restoring the withdrawn needle with a carriage, substantially as set forth.

Eighth, A needle bed divided into divisions, which are so combined with the machine that a division may be displaced and replaced, substantially as set forth.

Ninth, The combination of a removable division of the needle bed with instrumentalities for counterbalancing its weight, substantially as set forth.

Tenth, The combination of a removable division of the needle bed with a needle holder, substantially as set forth.

Eleventh, The combination of a traveling needle with a needle bed divided into divisions one of which may be displaced and replaced, substantially as set forth.

Twelfth, The combination of a transferring prong with a needle bed divided into divisions, one of which may be displaced, substantially as set forth.

Thirteenth, The combination of a removable division of the needle bed with its support by devices which permit a transverse movement, substantially as set forth.

Fourteenth, The combination of a series of reciprocating needles with two thread guides, one of which can be thrown out of gear when a single strip of work is being knit, the whole operating substantially as set forth.

Fifteenth, The combination of the thread guide carriage with catches that connect and disconnect it with the mechanism for imparting motion to it, substantially as set forth.

Sixteenth, The combination of the needle carriage with two sets of bumpers for operating two thread guides, substantially as set forth.

Seventeenth, The combination of the sinkers at the inner side of a division of the needle bed which remains in place, with a lifter, substantially as set forth.

Eighteenth, The depression of the yarn between the thread guide and the last needle fed with yarn, by an instrumentality which is separate from the thread guide and effects the depression substantially as set forth.

Nineteenth, The combination of the thread guide carriage with devices for griping the yarn which are independent of the thread guide.

Twentieth, The combination of the needle cam bar with a movable cam block operating to withdraw one of the needles to a less extent than the others, substantially as set forth.

Twenty-first, The combination of the under supports of the needles of a knitting machine, with devices which permit their adjustment laterally, as set forth.

Twenty-second, The combination of the stocks of the under supports with a rock shaft, substantially as set forth.

47,830.—Horse Power.—D. W. Hunt, San Francisco, Cal.:

I claim, first, The ball governor, J, in combination with the toggle, M, and shoe, O, the latter being attached to a swinging bar, N, or its equivalent, and placed in relation with the balance wheel, E, all being arranged and applied to a horse-power, substantially as and for the purpose herein set forth.

Second, The endless platform, D, provided with chains, P P, constructed of cast iron links, j, having longitudinal grooves, k, to receive plates, l, which are attached to the links by rivets, m, substantially as herein set forth.

Third, The brake or stop attachment composed of a pulley, Q, bearing on the belt, H, and attached to the lever, R, in combination with the shoe, S, interposed between the short arm, u, of said lever, and the pulley, G, to operate in the manner substantially as and for the purpose herein set forth.

Fourth, The cams, w w, on the shaft, V, in the supplemental frame, T, in connection with the pawl, W, and the perforated wheel V, or its equivalent, for adjusting the inclination of the frame, A, and endless platform, D, substantially as described.

Fifth, Hanging the frame, A, in the supplemental frame, T, by means of journals, b' b', attached to the sides of the frame, A, underneath and in line with the balance-wheel shaft, B'', substantially as and for the purposes herein set forth.

47,831.—Table for Hospitals.—Sarah J. A. Hussey, of Cornwall, N. Y:

I claim the above described adjustable table in combination with the head rest, substantially as set forth.

I also claim the foot rest and drawer bookholder in combination with the table as specified.

47,832.—Shears for Cutting Iron Bolts.—George W. Hyatt, Auburn, N. Y:

I claim the shear bars, B B, pivoted to the bar, A, as shown for the purpose already described.

47,833.—Stove Pipe Drums.—Jacob B. Hyzer, Janesville, Wis:

I claim, first, A heat radiator when constructed and arranged substantially as herein described and set forth.

Second, The combination of ascending and descending flues and an inner hot air space with a straight flue regulated by a single damper substantially as described.

Third Constructing the radial plates with a series of orifices or holes, substantially as and for the purpose set forth.

47,834.—Fruit Jar.—Charles G. Imlay, Philadelphia, Penn. Antedated December 6, 1864:

I claim, first, The use of the metal screw cap, c, for the purpose of locking any form or variety of glass stopper upon a glass jar, as described.

Second, I claim the glass stopper and cap, v j, when fastened by screw thread to the jar in the manner described.

Third, I claim a metal cap, whereby inclined slots in the cap and by projections, or lugs or portions of screw thread in the neck of the jar, it locks a glass stopper to a glass jar, and the same when no glass stopper is used.

Fourth, I claim the use of the hollow tube plug, v k, and plug, v x (with two apertures at its base), for locking the aperture inside of the jar as described.

Fifth, I claim all and each of the described and figured stoppers, when used in combination with my locking caps.

47,835.—Artificial Arm.—Hiram A. Kimball and Andrew J. Lawrence, Philadelphia, Pa.:

We claim, first, The arrangement of the levers, b b' j j and n, in combination with the spring, h, to open and shut the fingers in the manner substantially as above described.

Second, The lever, s, by means of which the motive power acts upon the fingers when the fire-arm is in any position, said lever being constructed and arranged, substantially as described.

Third, The bars, v v', in combination with the catch, y, and rest, A, whereby the fore arm is set and held in any desired position, the whole constructed and arranged substantially as described.

Fourth. The employment of the elastic strap, D, by which the artificial arm is held in position without chafing or confining other parts of the body, substantially as described.

47,836.—Shoulder Supporter.—J. W. Kimball, Boston, Mass., and John Mahady, Cambridge, Mass.:

I claim a combination of shoulder straps, with an attaching strap, substantially as and for the purpose described.

47,837.—Double Window.—T. S. Lambert, Peekskill, N. Y.:

I claim the combination of the convertible stop, F, and its molding, I, and the sashes, G and H, with the frame, A, in the manner and for the purpose substantially as set forth.

Second, The combination of the material, k, with the stop, F, the molding, I, the sashes, G and H, and the frame, A, in the manner and for the purpose substantially as set forth.

47,838.—Rotary Fan.—George Leach, Elmira, N. Y.:

I claim the combination of the fan shaft and the disk, with wings attached thereto.

I also claim the described taper form of wings in combination with the disk, substantially as described.

47,839.—Fanning Mill.—George Leach, Elmira, N. Y.:

I claim the slide board, k, whose front edges is adjustable and operative for the purpose described at all points longitudinally of the effective length of the sieve, g', in combination with the notched adjusting handle, i.

47,840.—Farm Gate.—Joel Lee, Galesburg, Ill.:

First, I claim the swivel guide and friction wheel, for the purposes set forth.

Second, The combination of the gate, A, the post, B, the stop, C, the block, H, and the cap, I, with the swivel guide and friction wheel, all arranged substantially as and for the purpose specified.

47,841.—Burglar Alarm.—Andrew J. Loomis, Madrid, N. Y.:

I claim the combination of the plate, A, the hammer with its axial shaft, E, and spring, F, the catch, G, the whole arranged substantially as described, and applied in the manner and for the purpose specified.

47,842.—Lock.—Walter K. Marvin, New York City:

I claim, First, The combination with the movable stump and movable tumblers, of a system of leverage, arranged substantially in the manner herein described, so as to prevent detection of the position of the gates or notches in the tumblers, as herein set forth.

Second, In permutation locks, having rotary tumblers or wheels, I claim the friction brake or brakes, in combination with the eccentric, arranged and operated substantially in the manner and for the purpose set forth.

47,843.—Button.—Edward Maynard, Washington, D. C.:

I claim a metallic collet or base, for the buttons having tongues or points stamped out centrally therefrom, substantially in the manner and for the purpose herein set forth.

And I claim, also, as a new article of manufacture, metallic fasteners for buttons, formed of a polygonal or cylindrical shank, having tongues or points projecting from the ends thereof, substantially in the manner as and for the purpose herein set forth.

47,844.—Process for Tanning.—B. H. McNulty and Wm. McKern, Mansfield, Ohio:

First, We claim the tanning process herein described, the same consisting in agitating the liquid by a rotary dasher, E, or equivalent mechanical means, while under pressure within the vat, substantially as and for the purposes set forth.

Second, The apparatus used in the above process, comprising the vat, A, lid, A', packing, a, nozzle, D, braces or retainers, C, and dasher, E, combined and arranged in the manner herein described and represented.

47,845.—Cook Stove.—Henry Mitchell, Richmond, Ind.:

I claim the combination and arrangement of the plate, C, containing the damper, B, at the upper front corner of the oven with the flues, I J and K, and the location of the guide plate, A, and of the pipe, H, by means of which the heat is taken by the shortest and most direct route entirely around the oven.

47,846.—Lightning Rod.—S. J. Mitchell, St. Louis, Mo.:

I claim the separator or division of the main point, A, into two bars connecting by means of branches, d, with the stem, B, of the rod, substantially as described.

[The object of this invention is to produce a lightning rod which will conduct the fluid with more certainty to the conductor or main rod, while it also presents a great number of attaching points or a large attracting suface without enhancing the difficulties of construction or the cost.]

47,847.—Device for Pulling on Boots.—F. H. Moore, Boston, Mass.:

I claim, First, Forming one or more apertures in the leg of boots or shoes, and providing the edge of such aperture or apertures with a convex border or flange, in the manner substantially as hereinbefore described, and for the purposes set forth.

Second, I claim as an article of manufacture, boot or shoe legs having, for the purposes set forth, one or more bordered or flanged apertures, substantially as herein described.

Third, I claim as an article of manufacture a boot or shoe the legs of which, for the purpose of pulling on said boots or shoes, are provided with one or more bordered or flanged apertures substantially ar described or set forth.

47,848.—Friction Match.—S. C. Moore, Boston, Mass.:

I claim putting the lighting or burning substance on one end or side of the splint or match and the lighting or igniting substance on the other end or side of the splint or match, substantially as described.

47,849.—Bed Plate for Paper-mill Engines.—Oliver Morse, Needham, Lower Falls, Mass.:

I claim so applying the grinding plates or knives to the bed as to allow of their being raised or lowered relatively thereto, substantially as hereinbefore set forth.

I claim the combination of the steel grinding knives with the clamp bar when the latter are constructed with a series of slots, substantially in the manner and for the purpose hereinbefore set forth.

47,850.—Rock Drill.—Joel Moulton, Boston, Mass.:

I claim, First, Causing the drill to revolve by means of the collar C, carrying projections which traverse oblique grooves in the position to be rotated in combination with the ratchet teeth, D, and pawls, E, as described.

Second, The described dress to the face of the reamer, consisting of serrations or teeth which run in the reverse direction on the different sides.

47,851.—Musical Instrument.—Ira F. Munson, Washington, D. C.:

I claim, First, The use of glue, gelatin, or other analogous substance, in the manufacture of musical instruments, or parts of such instruments, for the purpose of obtaining increased volume of tone and sonorousness, substantially as described.

Second, Uniting parts of musical instruments together by means of the material of which such parts are composed, for the purpose of obtaining homogeneousness, substantially as described.

Third, The use of a water-proof composition in the manufacture of musical instruments, or parts of instruments, substantially as described.

47,852.—Knitting-machine Needle.—John L. Otis, Florence, Mass., and Samuel L. Otis, Manchester, Conn.:

We claim, First, The recess, d, in the needle shank, to operate in combination with the stop, c, on the latch, substantially as and for the purpose set forth.

Second, Making the needle and latch of one thickness and operating them in the same slot of the needle bed, as specified.

Third, The stop, e and curved point of the latch, in combination with the cam, g, constructed and operating substantially as and for the purpose described.

47,853.—Machine for Ornamenting Jewelry, Plate, Etc. O. S. Parmenter, Providence R. I.:

I claim the machine for ornamental engraving, constructed and operating in the manner and on the principle substantially as described.

47,854.—Shafting.—Franklin P. Peregoy, Indian Valley, Cal.:

I claim the combination and arrangement of the guide blocks, C C C C, with the set screws, G G, and the friction rollers, D D D D.

Also the manner of connecting the two sections by means of the slideways, H H, substantially as fet forth.

47,855.—Seeding Machine.—S. M. Prentice, Southington, Ohio:

I claim the seed box or hopper, D, resting at its back end upon a spring, F, substantially as shown, and for the purpose of feeding and supplying the seed uniformly to the distributing wheel, C, as set forth.

[This invention relates to a new seeding machine designed for general use for planting various kinds of seed, and it consists in the employment of a self-adjusting hopper, in connection with a seed-distributing wheel, and adjustable shears or teeth.]

47,856.—Corset.—Clarissa Preston, Detroit, Mich.:

I claim a combined corset and supporter arranged with hooks or clasps, a, in front and made to lace in the rear, and provided with a bustle, B, and extension brace, g, substantially as and for the purpose set forth.

[This invention relates to a combined corset and supporter made to lace in the back and to clasp or hook in front, so that its width can be readily adjusted, and provided with an extension bustle, the brace of which is made to extend part way or all round the body, and which may be cut separate from the corset and attached to it or formed with the same, as may be desirable. The extension brace is adjusted to the requisite width by a hook catching in different slots or in any other suitable manner, whereby the same can be readily accommodated to the body of the wearer.]

47,857.—Horse Rake.—O. E. Randall, Lewiston, Maine:

I claim the combination of the bars, F, arms, i i, shaft, E, and and teeth, G G, all constructed, arranged and operating substantially as set forth.

[This invention consists in having the rake composed of a series of bars, constructed in a novel way and placed loosely on a shaft or rod with the teeth attached to each bar; the said rake being applied to a mounted frame having its wheels at a less distance apart than the length of the rake, so that the ends of the latter may project beyond the wheels, all being arranged in such a manner that all the advantages of the ordinary wooden and wire tooth rakes are retained while their disadvantages are avoided.]

47,858.—Mode of Propelling Railroad Cars.—S. G. Randall, New York City:

I claim the air-supply pipe, a, provided with suitable spouts, b, and applied in combination with the movable reservoir, C, and car, A, substantially in the manner and for the purpose set forth.

47,859.—Boots and Shoes.—T. K. Reed, North Bridgewater, Mass.:

I claim a boot and shoe having the construction substantially as specified.

47,860.—Adjustment for Optical Instruments C. B. Richards, Hartford, Conn.:

I claim the employment, in combination with the adjustable parts of an optical instrument, of one or more anti-friction wheels, and a friction roll, operating to effect the adjustment to focus, substantially in the manner hereinbefore clearly described, for the purpose set forth

47,861.—Machine for Shaving and Nicking Wood Screws.—D. M. Robertson, East Boston, Mass., and Jason A. Bidwel Boston, Mass.:

We claim the vibrating adjustable saw frame, R, in combination with the link, T, and cam, T, which operate the frame and move the saw, as described.

We claim the rotating saw, S, in combination with the right-and-left-hand screw nuts, arranged to adjust and hold the saw opposite the center of the arbor, E, substantially as described.

47,862.—Solar Camera.—Herman Roettger, Philadelphia, Pa.:

First, I claim a camera stand constructed with two adjustments at right angles to each other, for the purpose of following the path of the sun by a single motion, substantially as shown and described.

Second, The grooves, k k m m, in combination with a rigid camera box, as shown and described for the purpose set forth.

Third, The double chamber, S and B, when used to form a rigid camera box provided with slide grooves, as shown and described.

47,863.—Car Truck Frame.—D. B. Rogers, Pittsburgh, Pa.:

First, I claim the sustaining beam, made substantially as described and for the purposes set forth.

Second, The suspending or resting of car bodies, substantially as described and for the purposes set forth.

47,864.—Screw Propeller.—John B. Root, New York City:

First, I claim a screw propeller the blades of which have a curvature forward or in the direction of the revolution, combined with such a hollow curvature of the faces as is produced by a diminution of the pitch from the periphery toward the axis of the propeller, substantially as herein specified.

Second, The hollow rearward conical extension, C, of the hub attached to the body, B, thereof by being fitted into a groove, f, in the body and secured by a central bolt, f, which passes through the said extension and is screwed into the end of the propeller shaft, substantially as herein described.

47,865.—Machine for Cutting Leather.—J. F. Severence, East Bridgewater, Mass.:

I claim the combination of the presser bar, F, and its knife-holding opening, h, with the feed wheel, C, or the same and a knife, K, substantially in manner and so as to operate therewith, as specified.

I also claim the combination of the two sliders, E L, and their clamp screws or the equivalent thereof, with the presser bar, F, its knife-holding opening, h, and a stationary arm, D, arranged with respect to the feed wheel, C, substantially as hereinbefore set forth.

I also claim the combination of the gage, m, with the upper sli-

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der, L, and the presser bar, F, when combined with a feed wheel in manner and so as to operate therewith and with a knife, substantially as hereinbefore explained.

47,866.—Water Meter.—John Sheffield, Pultneyville, N. Y.:

I claim the combination of the wings, a a, shaft, D, gate, b, and inlet passage, O, all arranged to operate substantially as specified.

[This invention consists in adopting the principles of construction of the ordinary central discharge water wheel to the purposes of a water meter.]

47,867.—Game Board.—John Smith and E. M. Nutter, Feltonville, Mass. Antedated March 3, 1865 :

We claim the game boa d, as constructed, with the rotary cannon, the battery and the cavities, arranged substantially as described.

47,868.—Boring Well.—John Y. Smith, Alexandria, Va.:

First, I claim, in combination with a steam cylinder, whether arranged concentrically or eccentrically with said cylinder, a gripper box or other instrument, to intermittently hold and release the rope or cable, substantially as and for the purposes set forth.

Second, I claim the combination with a steam cylinder and gripper box, arranged as described, of a mechanism for intermittently rotating said box while firmly holding the tool, substantially as and for the purposes set forth.

Third, I claim a mechanism for producing intermittent rotation of the rope continuously in the same direction, in combination with a mechanism for simultaneously untwisting the rope, substantially as set forth.

Fourth, In combination with a gripper box or the mechanical equivalent thereof, for rotating the rope continuously in the same direction, I claim a drum around which the rope is wound, when said drum is hung in a frame revolving in the manner and for the purpose set forth.

Fifth, I claim the method herein described of producing a self-adjusting automatic feed of the rope.

Sixth, I claim the method herein described of regulating the force of the blow, substantially as set forth.

Seventh, I claim the means herein described, or the mechanical equivalent thereof, for producing self-adjusting automatic feed, which also serves to regulate the force of the blow.

Eighth, The method herein described of rotating the drum to withdraw the tools and return them with great rapidity, substantially as set forth.

47,869.—Safety-valve Rubber.—John Y. Smith, Alexandria, Va.:

First, I claim combining with a safety valve, constructed in the usual manner, as described, a metal disk of a resistance calculated to explode under a pressure exceeding that of safety.

Second, The construction of the valve of three parts, substantially as herein described and for the purposes set forth.

Third, in combination with a safety valve, constructed and operating as described, I claim the stop-cock for the purpose set forth.

Fourth, In combination with a valve and valve case, provided with a stop-cock, as described, I claim the pendant rod fast to the disk, substantially as set forth.

47,870.—Rock Drill.—John Y. Smith, Alexandria, Va.:

I claim, first, A rock drill composed of three or more cutting blades when recessed in the center or at the point of intersection of said blades, substantially as set forth.

Second, Forming the cutting edges of a three or more bladed rock drill by beveling one side of said blades in such manner as to tend to rotate the drill when striking a blow and to tighten the screw joint, substantially as set forth.

Third, Forming cutting edges upon the recessed portion of the blades, substantially as and for the purpose set forth.

47,871.—Oil Ejecter.—John Y. Smith, Alexandria, Va.:

First, I claim the combination with a suitable main tube and stationary valve seats of a central revolving steam or air cylinder provided with suitable valves constructed and operating substantially as hereinbefore described, so that the steam or air is ejected into the space surrounding said cylinder, in the manner and for the purposes set forth.

Second, In combination with the above, I claim the employment, at suitable intervals and interposed between the sections of the outer tube of valve chambers, for the admission and retention therein of the liquid raised by the injection of steam or other elastic fluid, substantially as set forth.

Third, In combination with the interior cylinder and surrounding valve chambers, I claim the slip joint attachment, so as to admit of the perfect yet easy vertical adjustment of the valves into their respective seats, substantially as set forth.

Fourth, In combination with two concentric cylinders, I claim making the valves and valve seats in the form of spherical caps or uniting the cylinder sections by ball joint attachment so as to yield to lateral adjustment, substantially as set forth.

Fifth, In valve chambers constructed as described, and in combination with hemispherical valves, I claim forming annular channels in the manner and for the purpose set forth.

Sixth, I claim the employment in an apparatus for raising liquid by direct action of steam and in combination with and as a lining of the steam cylinder of a hemp hose, whether or not boiled in linseed oil, substantially as set forth.

Seventh, I claim the combination of a steam cylinder closed at the base with a hinge trap or valve, operated by a cord or rod in the manner and for the purposes set forth

Eighth, In combination with a spherical valve I claim the employment of a steam deflector shield operating substantially in the manner and for the purpose set forth.

47,872.—Horse Rake.—Moore Smith (assignor to himself and P. W. Wellington), Worcester, Mass.:

I claim the combination of the tilting rake head, A, with the clutch, G, clutch projections, g and d, clutch lever, E, and cam, I, when constructed and operated substantially in the manner and for the purposes stated.

47,873.—Apparatus for Treating Ores.—Robert Spencer, New York City :

I claim protecting metallic vessels, which are used in the process of roasting ores, by coating their exposed surfaces with a fire-proof enamel, substantially as described.

47,874.—Apparatus for Treating Ores.—Robert Spencer, New York City :

First, I claim applying a series of revolving or oscillating wings or paddles within a vessel, E, which is constructed with a central ridge, a, over which the currents of mercury are interrupted in their passage from one side of the vessel to the other, substantially as described.

Second, The use of a double concave bottom amalgamating vessel, having revolving agitators arranged within it, substantially as described.

Third, The receiving troughs, c c, in combination with a perforated cover, E, to the amalgamating vessel, substantially as described.

Fourth, Conducting the waste water from the amalgamating vessel into the chamber, D, substantially as described.

Fifth, The feeding vessel, H, in combination with two or more movable cylinders, B, communicating with said vessel, substantially as described.

Sixth, The use of a water chamber, D, partially surrounding an amalgamating vessel, whether it is mounted over a furnace or not, substantially as described.

Seventh, The combination of one or more rotating or oscillating cylinders, B, with an amalgamating vessel and a furnace, C, substantially as described.

47,875.—Meat Cutter.—Le Roy S. Starrett, Newburyport, Mass.:

First, I claim the combination of the walking beam, I, pitman, H, crank shaft, E G, pawl, A, rack, P, and rotary bed, O, arranged and operating as specified.

Second, The combination of the horizontal plate, K, pendant rods, g, knives, L, rods, L L, and guide rod, M, constructed and arranged in the manner and for the purposes described.

47,876.—Lathe Fastening.—J. M. Stone (assignor to himself, G. L. Davis, and G. A. Wiley), North Andover, Mass.:

I claim clamping the piece, c, to the piece, b, and this to the way or frame, a, by one adjustment, the construction and operation being substantially as described.

47,877.—Method of Securing Bushes for Bungs to Barrels.—Thomas Summerfield, New York City :

I claim securing metallic bushes for bungs in barrels by means of nails clinched in the inner side of the stave by the lever anvil, substantially as set forth.

47,878.—Hoisting Apparatus.—Joseph A. Talpey, Somerville, Mass.:

I claim the improved tackle or hoisting apparatus consisting of two sprocket pullies arranged, constructed and geared together, and operating in conjunction with the endless chain and the loose block, substantially as specified.

I also claim so applying the lower sprocket pulley that it may be disconnected from the upper one and keyed or fashioned in position in the manner and for the purpose substantially as set forth.

47,879.—Keel for Ships and Other Navigable Vessels.—J. B. Tarr, Chicago, Ill.:

I claim the horizontal keel, c, when constructed and applied as herein specified so that its upper surface will be nearly parallel with the ship's bottom and its edge on the lee side will present an acute angle to the water, while the ship is careened to any extent.

[This invention is designed for vessels navigating the lakes, and which are often compelled to sail in shallow waters, and consists in a keel which expands laterally on each side of the center of the vessel's bottom so as partially to inclose a large body of water on either side.]

47,880.—Car Truck.—Edwin Thurston and James R. Ledyard, Covington, Ky.:

First, We claim the construction and use of skeleton iron bolsters, B and C, which admit of great strength and durability and can be used either as center bearings or side bearings.

Second, The construction and use of the cast end piece, A, which serve to stiffen or brace arch bars and lower bolster, also serve as a guide for top bolster to work in, and in connection with bolster, forming a truck combining strength, durability and lightness with ease of access in all its parts for repairs.

47,881.—Base-burning Stove.—W. B. Treadwell, Albany, N. Y.:

First, I claim the fire pot, C, with the flaring lipped extension, e f d, in combination with a base-burning stove, which has a coal-supply magazine, G, substantially as and for the purpose set forth.

Second, The combination of the flaring lipped extension, e f with the beveled brick, E, substantially in the manner and for the purpose described.

Third, The arrangement of perforated valve, I, chamber, K, flues, J and H, and the branch flue, N, with a base-burning stove, constructed substantially as described, for the purpose set forth.

47,882.—Machinery for Coiling Springs.—G. L. Turner, New York City :

First, I claim, in machines for coiling steel springs, whether used for coiling volute spiral or other steel or metallic springs, the employment and use of the collars, b and b', on the mandrel, and the bushings, C and C', in the socket of the rotating arbor which receives the mandrel, in combination with the mandrel, E, and the rotating arbor, C, substantially as and for the purposes above described.

Second, I claim, in machines for coiling spiral springs, the employment and use of a base or head block, such as that shown at G, or its equivalent, with holding or griping devices, such as those herein shown and described, or their equivalents, in combination with the mandrel, E, the worm, P, the guide, n, and the collar, M, when used for producing spirally-formed springs, with parallel ends on the said mandrel, substantially as and for the purposes above set forth.

Third, I claim in machines for coiling metallic springs of a spiral form, the employment and use of a movable collar, such as that shown at M, or its equivalent, in combination with the worm, P, the mandrel, F, and the guide, n, when used for the purpose of making that end of the spring which is next to the said collar perpendicular, to the axis of the mandrel, substantially as and for the purpose above set forth.

Fourth, I claim the employment and use of a guide such as that shown at n, or its equivalent, in combination with the mandrel, E, the worm, P, and the collar, M, when used for the purpose of suddenly checking the diagonal movement of the end of the bar and of keeping in its necessary vertical position, that is to say, at right angles to the mandrel and guiding it at right angles with the face of the mandrel preparatory to forming that end of the spring parallel, substantially as and for the purpose above described.

Fifth, The worm, P, or its equivalent, in combination with a coiling mandrel, when used for coiling spiral springs, substantially as above described.

Sixth, I claim, in machines for coiling spiral or other steel springs the employment and use of a friction band, T, or its equivalent, in combination with the spring, T, the worm shaft, P, and the frame, P2, or their equivalents, when used for the purpose of coiling metallic springs, substantially as above described.

Seventh, I claim the employment and use of adjustable guides, such as those shown at W W' S S and S' S', or their equivalents, in combination with the sliding table, U, or their equivalent carriage, and when used for the purpose of keeping the width of the bar vertical and of guiding it diagonally between the threads of the worm and the face of the mandrel during the process of coiling the spring, substantially as herein set forth.

Eighth, The distance gage, X, or its equivalent, applied upon the sliding table, U, or other equivalent carriage, to operate substantially as above described.

Ninth, I claim the employment and use of the cams, R R, in combination with the frame, P2, and the worm, P, the office of said cams being to elevate and hold in proper position the frame, P2, and the worm, P, during the operation of coiling spiral springs, substantially as above set forth.

Tenth, I claim the employment and use of the collar, 42, constructed as shown, and secured adjustably to the sliding arbor, D, in combination with the cap lever, Q, constructed as shown, for the purpose of holding the said arbor stationary during the operation of coiling volute, spiral or other metallic springs, substantially as above described.

47,883.—Cutting and Pressing Hay, Etc.—Rosewell Wakeman and Joseph L. Ballance, Port Deposit, Md.:

We claim the hay cutter, so combined with a hay press, and so arranged and operated as to discharge the cut hay into the pressing box, in combination with an automatic stamping or packing apparatus, substantially as and for the purposes herein set forth.

Second, We claim the manner of fastening the doors of the packing or pressing boxes, as herein described.

Third, We claim the combination of machinery herein described, for pressing cut hay into bales.

47,884.—Apparatus for Washing Ore.—James Watson, Cliff Mine, Mich.:

I claim the use of a long tie or trough, suspended so as to vibrate against a revolving cam or other device for giving to it a vibrating shock, in combination with a series of movable stops, constructed and arranged substantially as and for the purposes hereinbefore set forth.

47,885.—Attaching Cranks to Machinery.—Amos Westcott, Syracuse, N. Y.:

I claim a crank, constructed with the hole, c, and slot, D, Fig. 1, in the arm thereof, in combination with the flat-shanked screw, B, Fig. 1, by which it can be attached to the shaft, substantially as above described.

47,886.—Rolling Mill.—Elbridge Wheeler, Feltonville, Mass.:

I claim uniting the projecting ends of the rolls or shafts by means of a link or yoke, substantially as and for the purpose described.

I also claim the holding of the sections of dies or rings or their shafts, by means of screw threads cut upon the shafts, and a nut or nuts run up against them, substantially as described.

I also claim the fitting together of the sectional rings or dies, by means of countersinks upon one, and a projection upon the next adjacent one, to break the joint between them, and thus prevent the forming of a pin upon the article being rolled, substantially as described

47,887.—Stovepipe Drum.—Thomas Whitson, Woodstock, Ill.:

I claim a heat-radiator for use in connection with a stove, consisting in a base, B, and top, E, provided with the partitions, C and F, connected by the flues, H and J j, and return flues, L, and provided with the valves, D and G, and with or without the transverse pipes, K, substantially as described.

47,888.—Forming Tubes of Sheet Metal.—Moses G. Wilder, West Meriden, Conn.:

I claim the process of forming tubes of thin sheet metal, by compressing blanks of greater breadth than the development of the perimeter of the required tube into that perimeter, substantially as set forth.

47,889.—Valise for Artillery Harness.—Warren H. Wilkinson, Springfield, Mass.:

I claim as my invention the improved artillery valise, as made with the hollow or concavity, a, to fit and rest upon the seat of the saddle, substantially in manner as described.

I also claim the combination and arrangement of the bottom or girth straps, e e, with the valise made with the arched or concave bottom, as described.

I also claim the combination and arrangement of the four side eyes, b b b b, and their straps, c c c c, with the valise, made with the arched or concave bottom, as described.

47,890.—Cooking Stove.—Charles J. Woolson, Cleveland, Ohio :

I claim a detachable curved iron plate, when arranged in relation to the oven and fire plate of cooking stoves, in the manner and for the purpose herein set forth and described.

47,891.—Curtain Fixtures.—Jacob B. Bailey, New York City, assignor to Samuel E. Bailey, Springfield, Mass.:

First, I claim the ring socket, c, receiving the end of the curtain roller, in combination with the clamping piece, d, introduced and actuated as and for the purposes specified

Second, I claim a fan ed spool, with an opening through its center for the curtain roller, the said spool being retained in place by attaching the cord, substantially as specified.

Third, I claim a contractile india-rubber band, applied substantially as specified, to create friction for preventing the weight of the curtain turning the roller.

Fourth, I claim a curtain roller, in which friction as applied to sustain the curtain in any position, in combination with two cord spools wound in opposite directions, for the purpose and as specified.

47,892.—Machine for Manufacturing Boxes of Sheet Metal.—George W. Bentley (assignor to himself and Charles S. Hine). New York City :

I claim, First, In combination with the frame, F, provided with the shafts, a and i, and lever, h, the burr wheels, c k p and q, when the same shall be constructed and operated substantially as shown, for the purposes specified.

Second, I claim the adjustable bearing, m, with its adjuncts, when the same shall be combined, substantially as shown, for the purposes specified.

47,893.—Water Meter.—Geo. F. Blake, Medford, Mass., assignor to himself, Peter Hubbell and Job A. Turner, Boston, Mass.:

First, I claim so constructing the plungers or pistons of water meters that they shall perform the function of valves, and thus do away with the necessity for independent valves and their connections, substantially as specified.

Second, In combination with the foregoing, I claim making the plunger at each cylinder control the supply and exhaust of its twin or opposite cylinder, in the manner described.

Third, Passing the supply water through the body of the plungers, by means of water ways, arranged and operating substantially in the manner and for the purpose set forth.

47,894.—Whiffletree Irons.—Wm. M. Bryant (assignor to himself, John B. Wheeler and John R. Evans), Washington, D. C.:

I claim constructing the ferrules, A, for swingle or whiffletrees, with the stops or shoulders, d e, and inclined or bevel, f, substantially in the manner and for the purpose described.

Second, In combination with the subject matter of the first clause of my claim I claim the turning stem, B, with its locking pin, j, substantially as described.

Third, In combination with the subject matter of my first and second clauses of claim, I claim the screw-fastening, k, substantially as herein described.

47,895.—Fire Pot for Stove, Etc.—William Ennis (assignor to himself and Osborne Macdaniel), New York City :

First, I claim the method of generating steam in the fire-pot retort itself, as and for the purpose herein described.

Second, The construction of the steam-generator, A, combined with the feed-pipe, a, leading into the steam chamber, m, and the escape pipe, b, leading into the superheater, B, as and for the purpose herein described.

Third, The combination of the steam generator, A, the superheater, B, and the distributors, C C, connected with the pipes, a b and c, as and for the purpose herein described.

Fourth, The construction of a retort, divided by partitions into chambers or sections, formed of one or more pieces as and for the purpose herein described.

47,896.—Oiler.—William H. Hart (assignor to himself and Gilbert Rogers), Meriden, Conn.:

First, I claim the construction of an oiler, substantially as described, having two oval sides, so that the double spring consequent upon the described construction of the same may be obtained, substantially as set forth.

Second, The construction of an oiler with the double spring in the two sides, as claimed, in combination with the use of the rubber in the top of the cap, and pressing upon the tube, substantially as set forth, using for that purpose any suitable metal or material to accomplish the desired result, or that will produce the intended effect.

47,897.—Well Boring.—Henry Howson (assignor to William Wharton, Jr.), Philadelphia, Pa :

I claim, first, The combination of the crank, I, its pin and the lever, Q, with the drill rod or rope of well-boring apparatus, the whole being arranged and operating substantially as set forth for the purpose specified.

Second, The arrangement substantially as described of the driving shaft, H, its winding barrel, J, the clutch, K, or its equivalent, cog wheels, L and M, or equivalent driving gear, the crank shaft, h, and beam, Q.

Third, The lever, T, adapted to the boring rod or drill rope, and constructed for grasping and releasing the same, substantially as set forth.

Fourth, The said grasping and releasing lever in combination with the bent or curved guides, V V, or their equivalents, whereby the said lever is caused to turn laterally to a limited extent, in the manner and for the purpose described.

Fifth, The combination of the said grasping lever with the chain or cord, g, or the equivalent to the same.

47,898.—Stocks for Holding Screw Cutting Dies.—E. C. C. Kellogg (assignor to himself and James E. Coleman), Hartford, Conn :

I claim, first, The slotted plates, D D', and screws, e e e' e', in combination with each other and with the stock and dies, substantially as and for the purpose herein specified.

Second, The cavity, b, in the handle, a', having a female screw thread, e'', at its mouth, in combination with the pin wrench, E, having a male screw thread, e''', near its head, substantially as and for the purpose herein specified.

47,899.—Tool for Opening Boxes.—E. C. C. Kellogg, (assignor to himself and James E. Coleman), Hartford, Conn :

I claim the within described instrument, constituting a box opener and a scraper, having the parts arranged and combined as herein set forth.

47,900.—Machine for Polishing and Dressing Stone.—E. H. Lewis, (assignor to himself and N. Baldwin), Kingston, N. Y :

I claim the slide, C, with adjustable clamp, D, and stops, d, in combination with the plate, A, and hand lever, E, or its equivalent, constructed and operating substantially as and for the purpose set forth

47,901.—Casting Pipes.—Thos. J. Lovegrove (assignor to himself and Henry Baldwin, Jr.), Philadelphia, Pa :

I claim, First, Making hollow castings by rolling the mold containing the molten metal down an inclined plane, substantially in the manner described.

Second, The combination of flanges on a rotating mold with a railway, for the purpose of giving the mold a parallel movement, as set forth.

47,902.—Breech-loading Fire-arm.—Wm. H. and George W. Miller (assignors to Edmund Parker), Meriden, Conn :

I claim, First, The breech block, C, hinged to the top or sides of the barrel, A, and provided with a wedge-shaped projection, a, to fit in a

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corresponding recess in the cone seat, all the said parts being constructed substantially as herein specified, so as to admit of a conversion of a muzzle-loading to a breech-loading gun without change in the construction or arrangement of the stock, lock, or hammer.

Second, The combination of the spring bolt, e, ridge, f, and groove, g, with hinged breech block, C, and barrel, A, constructed and operating substantially as specified, and employed to sustain the recoil in form.

47,903.—Thill Tug.—William H. Noyes (assignor to himself and Charles H. Wheadon), Homer, N. Y:

I claim a metallic thill tug composed of two parts, a a, connected by a joint, b, and provided with a chafing ring, E, substantially as herein shown and described.

[This invention relates to a metallic thill tug for harnesses, and it onsists in constructing the tug of two parts connected by a joint, nd providing the tug with a lining or inner ring of india-rubber or ather, or other suitable material, which will prevent the chafing or rasion of the thills ; the chafing ring or lining, in consequence of e peculiar construction of the tug being capable, when worn by e, of ready removal from the tug and replaced by new.]

,904.—Cultivator.—Edward Phifer, Trenton, N. J., assignor to himselt and James M. Grover, Lawrenceville, N. J:

I claim, First, The combination in a cultivator of longitudinal frame pieces, adjustable at both ends to cultivate any width of row, with an axle on wheels adjustable to any width of furrow, substantially as and for the purpose described.

Second, The combination of an adjustable frame, with one adjustment for the tooth, with a separate adjustment for the shank, when both are flexible when changing the position of the cultivator tooth, and rigid when the tooth is at work, substantially as and for the purpose described.

Third The combination in the cultivator of one or more rigidly held teeth, or plows, with an adjustable mechanism, substantially as described, whereby the driver can control at pleasure the operation of the teeth, singly or in series, as set forth

47,905.—Sewing Machine.—George Rehfuss (assignor to the American Button-hole Sewing Machine Co.), Philadelphia, Pa:

I claim, First, The arm, I, with its notched projection, k, or its equivalent, when arranged to vibrate round the needle to operate on the thread held by the loop carrier, m, substantially as described.

Second, The sleeve, H, with its spiral opening, i, and arm, I, in combination with the needle bar, D, and pin, f, the whole being arranged and operating substantially as and for the purpose specified.

Third, The guard, n, arranged on the plate, L, in respect to the looper, m, substantially as set forth for the purpose described.

Fourth, The rod, E, and lever, G, in combination with the needle bar, D, and its spiral spring, a', the whole being arranged and operating substantially as and for the purpose set forth.

47,906.—Surveying Instrument.—Karl Schou (assignor to himself and G. H. Hull), Lafayette, Ind :

I claim, first, a surveying instrument provided with a wheel, B, index, l, cylinder, E, and tracing device or pencil, substantially in the manner and for the purpose set forth.

Second, The method herein described of adjusting the speed of the paper cylinder according to the grade or formation of the ground over which the instrument is drawn, consisting of the pendulum weight, J, carriage, F, friction disk. t, wheel, r, and cog wheels, a y z, or any equivalent means.

Third, The method of regulating the motion of the pencil or tracing mechanism according to the formation of the ground, substantially as herein set forth, consist ng of the wheel, s, friction disk, c', pinion, f, cog wheels, g' i', and toothed rack, a', or any other equivalent means.

Fourth, The combination of the pendulum weight, J, carriage, I F, cog wheels, s r, friction disks, c' t, paper cylinder, E, rack, a', with tracing device and index, k', all constructed and operating substantially as and for the purpose set forth.

Fifth, The elbow lever, o' o*, in combination with the pendulum weight, J, and carriage, F, applied substantially as set forth, so that a motion of the pendulum weight in either direction causes the carriage to move towards the centre of the wheel, r.

[This invention relates to a surveying instrument which serves to record the distance between two or more points on the surface of the ground and also to trace on a strip of paper the distance and the general formation of the ground between said points.]

47,907.—Coupling Shafts of Boring Tools.—Albert A. Wilson, Green Point, N. Y., assignor to himself and Hoffman Atkinson, Rouseville, Pa :

I claim providing the sleeve in connection with any two parts of the stem or shaft of tools, and arranging the same in combination with the key, substantially as and for the purpose described.

Second, The combination of the screw thread, g, shoulder, e, shoulder, a, and sleeve, C, in the construction of the coupling ends of well bored shafts or stems, substantially as and for the purpose herein described.

47,908.—Excavator.—James Hodges, of Penny Hill, Bagshot, England. Patented in England, June 17, 1865:

I claim, First, The excavating of peat or other substance by means of rotating screw excavators, one or more arranged with shield and scraper, or their equivalents, all placed on or connected with a floating vessel, or a carriage mounted on wheels, substantially as described.

Second, The squeezer composed of the rotating cylinder, provided with pockets and a series of pressure rollers, or their equivalents, when used in connection with the screw excavators, for the purpose specified.

Third, The pulping machine, composed of the perforated diaphragms and revolving knives, arranged within a suitable case to operate substantially as described.

Fourth, The combination of the screw excavators, endless elevators or carriers, squeezing device, and pulping mechanism, all arranged on or applied to a floating vessel, or a vehicle mounted on wheels, substantially as and for the purpose herein set forth.

47,909.—Printing Ink.—Anatole A. Hulot, Paris, France:

I claim, First, The manufacture of typographic ink, capable of being washed out when printed on movable adhesive and postage stamps, labels or designs requiring to be dated, signed. marked, or otherwise written upon with common ink, as herinbefore described.

Second, The application of the said typographic ink to the printing of typographic or copper plate stamps of all kinds, either with delible black or with fast colors; and to relieve stamps with colored grounds and delible vignettes for envelopes, to bank notes and other documents, where it is required to prevent the printing from being washed out.

Third, The application of the said typographic ink to imitate water color pictures, with one or more colors, and printed on paper or vellum, and also to printing in tinctorial colors on silk, cotton, wool, and other textile fabrics.

47,910.—Telegraphic Posts.—Francis Webb Shields, No. 3 Delahay street, Westminster, England. Patented in England, October 6, 1864:

I claim the construction of telegraph posts of separate parts, one of which is suitable for being driven into the ground, while the other is provided with means for securing the insulator, and is suitable for being attached to the part in the ground, substantially as herein described.

REISSUES.

1,963.—Raking Attachment to Harvesters.—Robert D. Brown, Covington, Ind. Patented April 7, 1863. Reissued Feb. 21, 1865:

I claim the continuously revolving rake, B, carried forward over the platform and back beneath the same by means of driving chains, belts, or their equivalents, and elevated to its working position during its forward motion and retracted in passing beneath the platform by means of a crank arm, D, or its equivalent working in a slot, for the purposes specified.

Second, I claim governing the position of the rake teeth by the partial rotation of the rake head, which travels parallel with the cutter bar, by means of an endless belt or chain when the said rotation is effected by the traversing of a wrist attached to the rake head, in a slot of the required configuration.

Third, The intermittent cradle, F f, operated as described, in combination with the continuously revolving rake, B, for the purpose set forth.

1,964.—Harve ter.—Edwin Jones, Cleveland, Ohio, assignor of Charles Tinker and J. A. Sprague, Mantua, Ohio. Patented Aug. 4, 1857:

I claim, First, Arranging the finger bar, or beam in a mowing machine, upon the right hand side of the frame which supports the driver and gearing, and on a line, or nearly so, with the front of said frame, in combination with supporting it in such position so that the entire finger beam, or either end thereof, independent of the other end, and without twisting or straining the joints or connections, can freely rise and fall to conform to the inequalities of the ground independent of the up and down motions of the frame, substantially as described.

Second, The combination with the main frame of a mowing machine, of a narrow finger beam, for sustaining a reciprocating cutter bar and cutters so hinged and supported that the entire bar, or either end thereof, independent of the other end, and without twisting or straining the joints or connections, can freely rise and fall to conform to the inequaleties of the ground, independent of the up and down motions of the main frame, while the front of the bar, and points of the guards are also free to rock or roll up, and then back again to the same horizontal plane, upon an axis of motion near the back of the finger beam, and independent of the up and down motions of the hinged support from which the finger beam derives its progressive motion.

Third, The combination in a mowing machine with the shoe which supports the heel of a hinged or floating finger beam free to rise bodily or at either end, as described, of a knuckle or stop, separate from the hinge, to prevent downward deflection when the beam is raised, substantially as described.

Fonrth, The combination with the main frame of a mowing machine having a hinged floating finger beam free to rise entire or at either end, as described, independent of the up and down motions of the main frame, so combined therewith as that the driver from his seat on the machine can elevate at pleasure the finger beam and cutters in nearly a horizontal position, to pass obstructions.

Fifth, The combination in a mowing machine, with a floating hinged finger beam, free to rise bodily, or at either end as described, independent of the up and down motions of the main frame, of mechanism so constructed and arranged that the driver from his seat on the machine can elevate not only the entire beam, but either end thereof at pleasure, to pass obstructions.

Sixth, The combination with a hinged finger beam in a mowing machine of a hinged lever and small ground wheel, in such a manner that the joint or outer end of the finger beam can be elevated above the heel to pass obstructions, and the weight thereof thrown upon the small wheel which serves as the fulcrum of the lifting lever.

Seventh, Hinging the shoe to which the heel of the finger beam is attached in a mowing machine, to a support which extends back and divides, and is in turn hinged to the frame which supported the gearing by its two forks or branches, whereby said hinged support is rendered more firm and secure.

Eighth, The combination of lever, X, wheel, Y, and rod, a, with hinged lever, Z, when applied to a hinged floating finger beam, substantially as and for the purposes set forth.

Ninth, The combination of the main frame, A, hinged floating finger beam, draft tongue and wheels, B and O, substantially as described:

Tenth, The combination of lever, X, wheel, Y, and rod, b, with hinged lever, Z', when applied to a hinged floating finger beam, substantially as and for the purposes set forth.

Eleventh, The arrangement of the pendant, K, with the pitmen, I and L, as and for the purposes shown and described.

Twelfth, The combination and arrangement of the gears, C D D', and G G', substantially as set forth.

1,965.—Magazine Fire-arm.—Edward Stabler, Sandy Springs, Md. Patented March 14, 1865 :

I claim, First, Limiting or arresting the movement of the carrier block, in the class of fire-arms herein described, at any desired point, for the purpose of converting the arm from a repeater into a single loader, substantially as described.

Second, I claim the stop, b, or its equivalent, in combination with the rotating carrier block, of a magazine gun, operating as and for the purposes herein set forth.

1,966.—Ship Knee.—Robert Thomas, Buffalo, N. Y. Patented July 19, 1864:

I claim a ship knee, made partly of wood (as represented by the chuck, H), and partly of iron (as represented by the iron-plate piece, G), for the purposes and substantially as set forth.

1,967.—Harvester.—Cyrenus Wheeler, Jr., Poplar Ridge, N. Y., assignee by mesne assignment of E. B Forbush. Patented April 17, 1855. Reissued April 26, 1859 :

I claim, First, In a harvesting machine where the cutting apparatus is placed opposite or nearly opposite the center of the driving wheel, so constructing the main frame that the rear cross timber shall project inwardly at an angle towards the center line of the machine, substantially as represented by the cross timber, A3.

Second, A gear frame, C, having suitable bearings formed therewith for supporting the crank and bevel wheel shafts with the gearing mounted thereon, in a compact working position, substantially as described.

Third, A gear key, F, in combination with the gearing shaft, D2, constructed and used substantially as described.

1,968.—Harvester.—Cyrenus Wheeler, Jr., Poplar Ridge, N. Y., assignee by mesne assignment of E. B. Forbush. Patented April 17, 1855. Re-issued April 26, 1859 :

I claim a hinged supporting piece, H, having sockets, H', formed therein for holding divergent fingers, thereby forming a skeleton track clearer, substantially as described.

1,969.—Harvester.—Cyrenus Wheeler, Jr., Poplar Ridge, N. Y., assignee by mesne assignment of E. B. Forbush. Patented April 17, 1855. Reissued April 26, 1859 :

I claim, in combination with a cutting apparatus placed in rear of a line drawn through the front of the driving wheel, and a grain platform having a side delivery, a seat for the raker, supported upon or by the main frame, and located behind the line of the cutters and at the side of the grain platform, and so arranged that the raker may sit facing the falling grain and deliver the grain at the side of the platform in the rear of the main frame, substantially as set forth.

1,970.—Harvester.—Cyrenus Wheeler, Jr., Poplar Ridge, N. Y., assignee by mesne assignment of E. B. Forbush. Patented April 17, 1855. Reissued April 26, 1859 :

I claim, First, Providing and using a strengthening bar in the construction of a removable grain platform, so as to give additional strength and stiffness to the platform, for the purposes and substantially as described.

Second, The combination of a removable grain platform, with a short finger bar and main frame of a mowing machine, substantially as described, for the purpose of converting a mowing machine into a reaping machine, without change of finger bar or cutters, the combination and connection being such that that the strength of the grain platform is united with the strength of the finger bar to prevent the platform or finger bar from materially bending or springing when the machine is used for reaping grain, substantially as described.

1,971.—Harvester.—Cyrenus Wheeler, Jr., Poplar Ridge, N. Y., assignee by mesne assignment of E. B. Forbush. Patented April 17, 1852. Reissued April 26, 1859:

I claim, First, Forming a recess in the outside shoe in rear of the cutters, substantially as shown at K, and for the purpose set forth.

Second, The locks or catches, Z Z', formed in the clamp, for the purposes set forth.

1,972.—Harvester.—Cyrenus Wheeler, Jr., Poplar Ridge, N. Y., assignee by mesne assignment of E. B. Forbush. Patented July 20, 1855. Reissued July 8, 1856, and again reissued April 19, 1859:

I claim, First, So connecting the cutting apparatus, having a shore and separate finger bar to the main frame of the machine that it may be adjusted to different hights for reaping, or lowered to the ground for mowing without changing the position of the main frame, substantially as described.

Second, Connecting the finger bar to the grain side of the main frame and supporting it by one end only, by means of an adjustable device and the inwardly projecting ends of the cross pieces of the main frame, substantially as set forth.

Third, The slotted frames, K K, and locking bolts, i i, applied and used for the purpose and substantially as set forth.

1,973.—Harvester.—Cyrenus Wheeler, Jr., Poplar Ridge, N. Y., assignee by mesne assignment of E. B. Forbush. Patented July 20, 1852. Reissued July 8, 1856, and again reissued April 19, 1859:

I claim, First, Making the outer and inner shoes broader in front of the finger bar as shown at, J and m''', for the purpose of bracing the guard fingers laterally.

Second, So constructing skeleton guard fingers and arranging them on the finger bar that they will mutually brace and support each other forward of the finger bar, substantially as set forth.

Third, The bearing piece, z, placed between the outer shoe and guard finger for the support of the outer end of the cutter bar, substantially as described.

1,974.—Harvester.—Cyrenus Wheeler, Jr., Poplar Ridge, N. Y., assignee by mense assignment of E. B. Forbush. Patented July 20, 1852. Reissued July 8, 1856, and again reissued April 19. 1859 :

In combination with a short finger bar and a shoe by which it is connected to the main frame of the machine and a cutting apparatus located in rear of a line drawn through the front of the driving wheel, a quadrant-shaped platform so arranged that the cut grain may be delivered therefrom at the side of the platform and in rear of the main frame, substantially as set forth.

1,975.—Harvester.—Cyrenus Wheeler, Jr., Poplar Ridge, N. Y., assignee by mesne assignment of E. B. Forbush. Patented July 20, 1852. Reissued July 8, 1856, and again reissued April 19, 1859:

I claim, First, In combination with a cutting apparatus and a quadrant-shaped grain platform, and both located in the rear of a line drawn through the front of the driving wheel, a rake, supported by a pivoted connection on the main frame in rear of the axis of the driving wheel, and so arranged that it will sweep over the platform and deliver the grain in the rear of the main frame, substantially as set forth.

Second, A movable fulcrum upon which the rake is suspended, and operated in the manner substantially as described.

EXTENSIONS.

Machine for Arranging and Feeding Screw Blanks.—Thomas J. Sloan, New York City. Patented Feb. 25, 1851. Reissued March 29, 1853, and extended Feb. 24, 1865 :

I claim the lifters which select and lift the blanks, etc., from the hopper, substantially as specified, in combination with ways or conductors, or the equivalents thereof, substantially as specified, into or onto which the blanks, etc., are transferred, as specified.

And I also claim giving the lifters, or to the inclined or their equivalents, a lateral motion, in combination with a stop or detector, substantially as specified, for the purpose of arresting the operation of the lifters until a further supply is required, as specified.

And, finally, I claim the sliding carrier, with its recess for receiving and holding the screw blanks, substantially as specified, in combination with the spring fingers, substantially as specified, for taking the screw blanks from the carrier and presenting them to the jaws, as specified.

Steam Engine Governor.—Junius Judson, Rochester, N. Y. Patented March 4, 1851. Reissued Feb. 28, 1865, and extended March 3, 1865 :

I claim as my invention communicating the action of a governor to its valve or valves, gate, or equivalent regulating device, in such a manner that when the speed of the engine or motor becomes low, either from increase or resistance to overcome, or from diminution of pressure of the motive power, the said valve or equivalent will be accelerated or caused to move through a comparatively large space, to uncover or cover a comparatively large area of the valve or gate opening, so as to add to, or take from, the engine or motor, by a given change of its speed, comparatively large amounts of power; and, also, when the speed becomes high, either from diminution of resistance to overcome, or from increase of pressure of the motive power, the said valve or equivalent will be by a like change of speed retarded or caused to move through a comparatively small space to uncover or cover a comparatively small area of valve opening, so as to add to or take from the engine or motor comparatively small amounts of power, for the purpose of securing, as nearly as may be, uniform speed of the engine or motor, under all variations of the power of resistance, substantially as herein set forth.

Steam Drilling Machine.—Joseph W. Fowle, Boston, Mass. Patented March 11, 1851, and extended March 6, 1865 :

I claim the combination of a direct action steam drill, in which both engine and drill are mounted on a frame, which slides in a swinging frame, capable of being adjusted in any required position with the apparatus, substantially as hereinabove described, which is connected with and actuated by the crosshead of the engine, for causing the sliding frame to move along the swinging frame toward the rock.

Design for a School Desk.—Wm. P. Uhlinger, Philadelphia, Pa. Patented Oct. 8, 1861. Extended March 20, 1865 :

I claim the ornamental configuration of the cast-iron uprights, B, constituting, in combination with a table, C, back, D, and seat, A, a new and original design for a school desk, as above set forth and represented in the annexed drawing.

Window-curtain Fixtures.—Silas S. Putnam, Dorchester, Mass. Patented April 15, 1851. Reissued March 31, 1857. Extended March 28, 1865 :

I claim attaching the curtain to its roll by a piece or strip, which fits into a groove in the roll, and is secured thereto by caps at the ends, in the manner substantially as herein set forth.

Compound Metallic Door for Vaults, Safes, Etc.—Ira L. Cady, New York City. Patented April 29, 1851. Extended April 29, 1865 :

I claim a door or wall for a vault or safe, made by securing to each other, at a certain distance apart, two plates of sheet metal, provided with a rim or curb, and filling the vacant space between them with immaleable cast-iron poured in while melted, substantially in the manner herein described.

Limekiln.—Richard E. Schroeder, Rochester, N. Y. Patented May 6, 1851 :

I claim the flues, d d, encircling the cupola, and provided with apertures or flues, e e e e e, for admitting the heat and flame to the action upon the limestone from various points, substantially as described, in combination with the air chamber, k, encircling the cupola, as described, and

I also claim the aperture, p, and passage therefrom, for saving the heat arising from the manufactured lime while being removed, all operating conjointly in the manner and for the purpose herein fully set forth.

Manufacture of India-rubber.—Henry B. Goodyear, New Haven, Conn., administrator of Nelson Goodyear, deceased. Patented May 6, 1851. Reissued (No. 556) May 18, 1858. Extended May 5, 1865 :

I claim the combining of sulphur and india-rubber or other vulcanizable gum, in proportions substantially as specified, when the same is subjected to a high degree of heat, substantially as specified, according to the vulcanizing process of Charles Goodyear, for the purpose of producing a substance or manufacture possessing the properties or qualities substantially such as described; and this I claim whether the said compound of sulphur and gum be or be not mixed with the other ingredients, as set forth.

Manufacture of India-rubber.—Henry B. Goodyear, New Haven, Conn., administrator of the estate of Nelson Goodyear, deceased. Patented May 6, 1851. Reissued (No. 557) May 18, 1858. Extended May 5, 1865 :

I claim the new manufacture or substance hereinabove described, and composed of india-rubber or other vulcanizable gum and sulphur, in the proportions substantially such as described, and, when incorporated, subjected to a high degree of heat, as set forth, and this I claim whether other ingredients be or be not used in the preparation of the said manufacture, as herein described.

Mode of Preventing the Entrance of Dust, Etc., into Railroad Cars.—Edward Hamilton, Chicago, Ill., assignor to Nelson Goodyear, deceased. Patented May 27, 1851. Reissued Feb. 15, 1853. Extended May 8, 1865 :

I claim inducing outward currents of air through the windows of

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railroad cars, to prevent the entrance of dust, etc., by the action of the surrounding air on deflectors combined with the sides of the car substantially as specified, and operating on the principle set forth.

Coffin.—An Act for the Relief of the Heirs of Salmon D. Fisk, deceased. Approved Feb. 17, 1865. Patented Nov. 14, 1848. Reissued March 6, 1860:

First, Claims the manufacturing of coffins of cast or raised metal, when made substantially in the form and manner above described; that is to say, corresponding nearly with the human form, and making the coffin in two nearly equal parts or shells united by a flanch, substantially as set forth.

Second, The manufacture of coffins of raised or cast metal, in two shells each, formed with recesses of greater or less depth, which shall respectively constitute a portion of the receptacle of the corpse, thus approximating the coffin more nearly in shape to that of the human body than could otherwise be done.

Revolving Frame for Drying Fruit and other articles.—J. C. Dickey, Saratoga Springs, N. Y. Patented June 3, 1851:

I claim the center, E, with three or more arms to support a cord, netting or other cloth, for the purpose of exposing cloths, clothes, glue, fruits, seeds, etc., with facility to be dried; so constructed that the arms may be raised up and brought together, to expedite the collection of the articles dried, and so that it may be conveniently removed when not in use, substantially as described.

PATENTS

GRANTED

FOR SEVENTEEN YEARS.

MUNN & COMPANY,

In connection with the publication of the SCIENTIFIC AMERICAN, have acted as Solicitors and Attorneys for procuring "Letters Patent" for *new inventions* in the United States and in all foreign countries during the past *seventeen years*. Statistics show that nearly ONE-THIRD of all the applications made for patents in the United States are solicited through this office; while nearly THREE-FOURTHS of all the patents taken in foreign countries are procured through the same source. It is almost needless to add that, after *seventeen years'* experience in preparing specifications and drawings for the United States Patent Office, the proprietors of the SCIENTIFIC AMERICAN are perfectly conversant with the preparation of applications in the best manner, and the transaction of all business before the Patent Office; but they take pleasure in presenting the annexed testimonials from the three last ex-Commissioners of Patents.

MESSRS. MUNN & CO.:—I take pleasure in stating that, while I held the office of Commissioner of Patents, MORE THAN ONE-FOURTH OF ALL THE BUSINESS OF THE OFFICE CAME THROUGH YOUR HANDS. I have no doubt that the public confidence thus indicated has been fully deserved, as I have always observed, in all your intercourse with the office, a marked degree of promptness, skill, and fidelity to the interests of your employers. Yours very truly,

CHAS. MASON.

Judge Mason was succeeded by that eminent patriot and statesman, Hon. Joseph Holt, whose administration of the Patent Office was so distinguished that, upon the death of Gov. Brown, he was appointed to the office of Postmaster-General of the United States. Soon after entering upon his new duties, in March, 1859, he addressed to us the following very gratifying letter.

MESSRS. MUNN & CO.:—It affords me much pleasure to bear testimony to the able and efficient manner in which you discharged your duties as Solicitors of Patents, while I had the honor of holding the office of Commissioner. Your business was very large, and you sustained (and I doubt not justly deserved) the reputation of energy, marked ability, and uncompromising fidelity in performing your professional engagements.

Very respectfully, your obedient servant,

J. HOLT.

Hon. Wm. D. Bishop, late Member of Congress from Connecticut, succeeded Mr. Holt as Commissioner of Patents. Upon resigning the office he wrote to us as follows:

MESSRS. MUNN & CO.:—It gives me much pleasure to say that, during the time of my holding the office of Commissioner of Patents, a very large proportion of the business of inventors before the Patent Office was transacted through your agency; and that I have ever found you faithful and devoted to the interests of your clients, as well as eminently qualified to perform the duties of Patent Attorneys with skill and accuracy. Very respectfully, your obedient servant,

WM. D BISHOP.

THE EXAMINATION OF INVENTIONS.

Persons having conceived an idea which they think may be patentable, are advised to make a sketch or model of their invention, and submit it to us, with a full description, for advice. The points of novelty are carefully examined, and a written reply, corresponding with the facts, is promptly sent, free of charge. Address MUNN & CO., No. 37 Park Row, New York.

As an evidence of the confidence reposed in their Agency by inventors throughout the country, Messrs. MUNN & CO. would state that they have acted as agents for more than TWENTY THOUSAND inventors! In fact, the publishers of this paper have become identified with the whole brotherhood of inventors and patentees, at home and abroad. Thousands of inventors for whom they have taken out patents have addressed to them most flattering testimonials for the services rendered them; and the wealth which has inured to the individuals whose patents were secured through this office, and afterwards illustrated in the SCIENTIFIC AMERICAN, would amount to many millions of dollars! Messrs. MUNN & CO. would state that they never had a more efficient corps of Draughtsmen and Specification Writers than those employed at present in their extensive offices, and that they are prepared to attend to patent business of all kinds in the quickest time and on the most liberal terms.

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The service which Messrs. MUNN & CO. render gratuitously upon examining an invention does not extend to a search at the Patent Office, to see if a like invention has been presented there; but is an opinion based upon what knowledge they may acquire of a similar invention from the records in their Home Office. But for a fee of $5, accompanied with a model, or drawing and description, they have a special search made at the United States Patent Office, and a report setting forth the prospects of obtaining a patent, &c., made up and mailed to the inventor, with a pamphlet, giving instructions for further proceedings. These preliminary examinations are made through the Branch Office of Messrs. MUNN & CO., corner of F and Seventh streets, Washington, by experienced and competent persons. Many thousands of such examinations have been made through this office, and it is a very wise course for every inventor to pursue. Address MUNN & CO., No 37 Park Row, New York.

THE VALIDITY OF PATENTS.

Persons who are about purchasing patent property, or patentees who are about erecting extensive works for manufacturing under their patents, should have their claims examined carefully by competent attorneys, to see if they are not likely to infringe some existing patent, before making large investments. Written opinions on the validity of patents, after careful examination into the facts, can be had for a reasonable remuneration. The price for such services is always settled upon in advance, after knowing the nature of the invention and being informed of the points on which an opinion is solicited. For further particulars address MUNN & CO., No. 37 Park Row, New York.

The Patent Laws, enacted by Congress on the 2d of March, 1861 are now in full force, and prove to be of great benefit to all parties who are concerned in new inventions.

The law abolishes discrimination in fees required of foreigners, excepting natives of such countries as discriminate against citizens of the United States—thus allowing Austrian, French, Belgian, English, Russian, Spanish and all other foreigners, except the Canadians, to enjoy all the privileges of our patent system (except in cases of designs) on the above terms. Foreigners cannot secure their inventions by filing a caveat; to citizens only is this privilege accorded.

CAVEATS.

Persons desiring to file a caveat can have the papers prepared in the shortest time by sending a sketch and description of the invention. The Government fee for a caveat is $10. A pamphlet of advice regarding applications for patents and caveats is furnished gratis, on application by mail. Address MUNN & CO., No. 37 Park Row, New York.

HOW TO MAKE AN APPLICATION FOR A PATENT.

Every applicant for a patent must furnish a model of his invention is susceptible of one; or, if the invention is a chemical production, he must furnish samples of the ingredients of which his composition consists, for the Patent Office. These should be securely packed, the inventor's name marked on them, and sent, with the Government fees, by express. The express charge should be pre-paid. Small models from a distance can often be sent cheaper by mail. The safest way to remit money is by a draft on New York, payable to the order of Messrs. MUNN & CO. Persons who live in remote parts of the country can usually purchase drafts from their merchants on their New York correspondents; but, if not convenient to do so, there is out little risk in sending bank bills by mail, having the letter registered by the postmaster. Address MUNN & CO., No. 37 Park Row, New York.

Notes and Queries

J. J., of Me.—Your communication in relation to a very small household steam engine is interesting to us, but you can make one far more valuable for our columns when you get your ideas more fully developed and in more definite form.

E. A. H., of Ill.—Allotropic sulphur gradually returns to its normal condition. The new atomic weights adopted by Miller, we judge, are coming into general recognition.

A. M. D., of Mass.—Perhaps niter might be separated from maple sugar by crystalizing the sugar. The best plan would be not to put any niter into the sugar.

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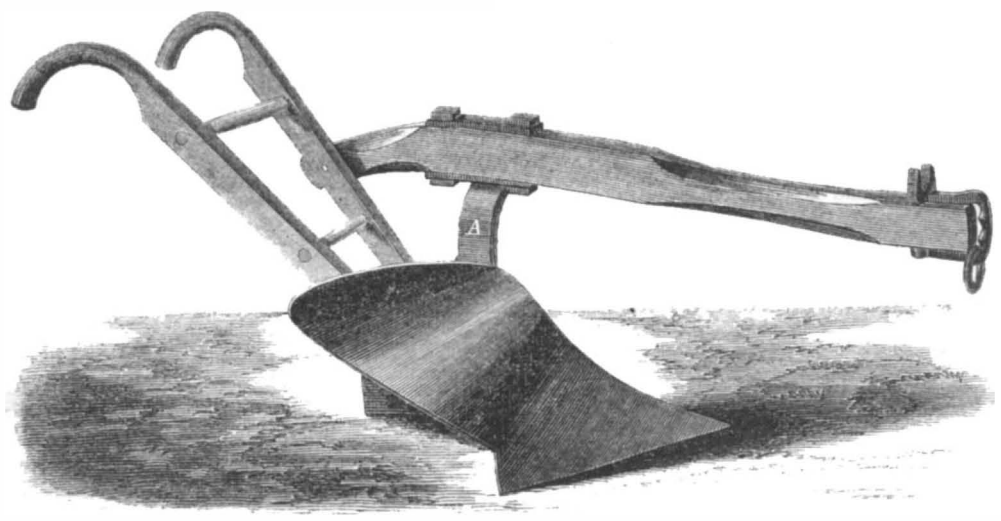
Improved Plow.

The following description of the annexed illustration is furnished by the inventor:—

Time and experience have shown that, of all agricultural implements now in use, there is none of more vital importance to the farming community than a perfect plow; upon it, to a very great extent, depends the success of the farmer, and hence it has ever been his constant study to remedy its defects. Never has he been able to devise means by which the most serious objection to the ordinary plow—choking—could be obviated. This defect, however, is now completely overcome by the improvement herewith illustrated, and the farmer is enabled by this improvement to cultivate his worst land without suffering the annoyance heretofore met with. He is also enabled to convert the straw stubble, etc., to his own advantage by turning it underneath, the surface, where it decomposes and thus adds fertility to the soil.



PIERPONT'S PLOW.

The practical eye will at once discover in the design of the bent standard, A, the impossibility of choking from the accumulation of rubbish; as fast as it collects it is forced to pass to one or the other side of the plow, and eventually pass under the surface.

This is not the only advantage which this plow possesses. The ease with which the plowman can regulate the width and depth of his furrow is another very important item; this is done simply by the use of the "slot" in the lower end of the standard and the "plate" on the top.

This standard, combining as it does, all the good qualities of the ordinary plow, and being so perfectly adapted to the wants of farmers in every locality, is now offered to the public by State, county, township or shop rights—confident in the belief that ere long this improvement will supplant all others and be universally sought after by the enterprising farmer.

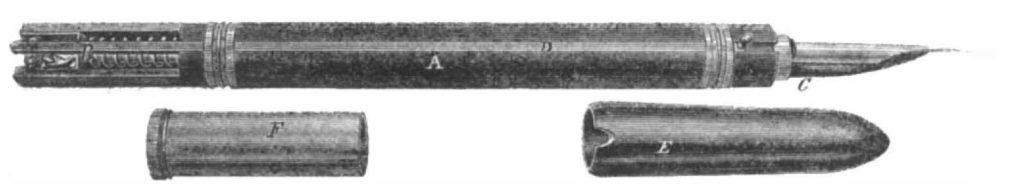
Patented through the Scientific American Patent Agency, Oct. 18, 1864. For further information inquire of Joshua Pierpont, La Harpe, Ill.

Improved Fountain Pen.

Vigor of style and felicity in expression are often frequently ruined by a single dip. It is moreover annoying to be constantly interrupted in the current of thought by the necessity to replenish the pen with ink.

Copyists, and, in fact, all persons who have much writing to do, find fountain pens useful for supplying ink continually to the pen, it being only necessary to fill the fountain once in a certain time, and the ink then flows out mechanically.

The article here illustrated is claimed to be an improvement on this class of pens, it being in a measure self-cleaning—at least so far as relates to keeping the ink passage open; it is easily managed and regular in its action. The details are as follows:—



WELLER'S FOUNTAIN PEN.

The holder, A, is hollow, and contains the ink, except at a certain portion near the end, which is devoted to the simple mechanism which governs the ink-flow. This mechanism is merely a rod with a spring, B, slipped over it. The rod connects to a needle inside the guard, C, between it and the pen, and communicates a sliding motion to the needle when the bar, D, is moved with the fingers resting on it. This rod also actuates a small valve in the end of the fountain, so that ink is admitted to the pen when the bar, D, is moved; the needle, by its thrusting motion prevents the gum, which is a component part of all inks, from clogging up the passage to the pen point. In this way the pen is kept constantly supplied with ink, and more or less may be let on by working the bar, D, as aforesaid.

This is a simple and compact arrangement for the purpose, and will doubtlessbecome popular.

Patented Sept. 29, 1863, by Jos. Weller. For information as to rights to manufacture in the State of New York, address Brougham & McKee, 48 Fulton street, Brooklyn, N. Y.; for all other places address Jos. Weller, Washington C. H., Ohio.

Concrete Buildings.

A correspondent of the *Country Gentleman* says:—I find that cobblestone packed in lime mortar between boards laid on the wall raised as fast as it sets, makes a cheap and substantial building. It is rough coated on the outside, blocked off and colored in imitation of stone. No finish can excel this in beauty or durability. In the country such finish blends harmoniously with the landscape, is pleasing to the cultivated eye, and winning to the senses. I built an ash and smoke-house 8 feet square by 7 feet high, cemented at bottom, and beautifully finished, for $12. It answers every purpose for such a building, I built a boiler and hog-house, 18 feet square by 12 feet high, well finished on outside, at an expense of $50. I can keep corn in it clear of rats. I built a drying house for a keg-manufacturing company, 18 by 22 feet, by 10 feet high, at a cost of $100. It has sustained a great heat, enough to fire a wooden building, and answers every purpose. Apples could be dried in such a house to good profit. The stones were gathered from the adjacent grounds, and were of all sizes to fit in a 10 and 20-inch wall. Farm hands can work on such walls, having a master mason to direct the laborer. Where stone are plenty, buildings of this material can be reared for one-half the cost of wood. For dwelling houses strips of boards are laid up in the wall for lathing, to give an air chamber to avoid any dampness.

A TOAD lately found by some quarrymen at Hartlepool, Eng., and announced to be 6000 years old, is declared not a myth. The Rev. Robert Taylor, of St. Hilda's Parsonage, states that the toad is still alive, that it has no mouth, that it was found in the center of a block of magnesian limestone, 25 feet below the surface of the earth, and that it differs in many respects from all ordinary toads.

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